Land Use & Mobility

2 and 5 Streets Two-Way Traffic Conversion Report

THE CITY OF
CALGARY
ROADS

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1.0 EXECUTIVE SUMMARY

1.1 SUMMARY

The Inner City Transportation Study (ICTS) was a derivative of the Calgary Transportation Plan (CTP) that addressed the hierarchical road network, transit priorities and land use issues. The foundation of this study was a vision enunciated in the Calgary Transportation Plan of achieving, over time, a reasonable equilibrium between mobility, affordability, and quality of life. An implementation strategy was considered by City Council in July 2000, and one of the recommendations approved was the conversion of the following streets from one-way to two-way traffic operations:

- 2nd Street S.W. – 10th Avenue to 26th Avenue
- 5th Street S.W. – 17th Avenue to Elbow Drive
- 25th and 26th Avenues – 2nd Street to 4th Street.

The purpose of this report is to document the process to prepare the implementation plan for converting the above-mentioned roadways to two-way traffic operations. This project entailed documenting existing traffic control devices and street plans, developing a traffic plan for the new traffic pattern, undertaking a public consultation program, and preparing cost estimates for the conversion of the streets to two-way traffic operations.

The rationale for converting these streets from one-way to two-way traffic operations is:

- It enhances the livability of the residential uses in the Cliff Bungalow-Mission area.
- It improves the accessibility to the area, in that traffic circulation patterns are more flexible and easier to understand. As a result, motorists travel distances to their destinations tend to be shorter.
- It maintains a reasonable balance of mobility for those commuters oriented to the Downtown.
- It recognizes that the existing one-way system has certain dysfunctional characteristics.

Over the past decade, there more than 25 cities in North America have converted from one way streets to two way operations in the central city area. These cities have ranged from small communities (Sheridan, Wyoming) to large cities (Buffalo, New York). In Canada, Edmonton is the largest city that has undertaken these street system conversion projects. Most of these cities can be characterized as having downtowns

where economic activity has declined due to the sub-urbanization of shopping opportunities and employment. The conversion to two-way traffic was not the panacea for business revitalization, just one of the many components of the program that aided in the overall process.

In developing the traffic plans for the conversion to two-way traffic, some of the critical elements considered were the existing road widths, transition locations from one-way to two-way traffic, turning lanes at key intersections, curb parking, and creation of wide traffic lanes on 2nd Street to provide for shared-bicycle operations. Representatives from adjacent community associations and business groups were organized into a working group that provided input on the traffic plan and the various traffic control alternatives considered in preparing the implementation plan.

Traffic forecasts prepared for the Inner City Transportation Study were used to assess the operations at key intersections under the two-way traffic pattern. This analysis found that due to turning volumes, the shared bicycle lane operation would have to be discontinued on 2nd Street between 15th and 18th Avenues and in the vicinity of the intersections at 11th Avenue and 12th Avenue. The intersection of 4th Street and Elbow Drive will be a location where major traffic delays will occur during the afternoon peak period.

The traffic plan for 5th Street is basically to convert the two southbound lanes into one travel lane for each direction of travel. At 17th Avenue, two lanes will be provided, one each for turns on to 17th Avenue for traffic traveling east or west on this major street. Curb parking will be maintained on the west side; however, south of 23rd Avenue, the curb parking will be switched to the east side. Between 25th Avenue and Elbow Drive, a left turn lane will be developed to facilitate the southbound to eastbound left turn movements. On Elbow Drive, a left turn lane will be provided in the area west of 5th Street to facilitate traffic desiring to proceed north on 5th Street.

The traffic plan for 2nd Street is somewhat similar to 5th Street in that the two northbound lanes are converted to one lane for each direction of travel under the two-way traffic operations. However, wider travel lanes are generally provided to accommodate a shared-bicycle operation between the Elbow River pathway and Downtown Calgary. Due to heavy turning traffic, the shared-bicycle operations will be discontinued between 25th and 26th Avenues, 15th to 18th Avenues, and in the vicinity of the intersections at 11th and 12th Avenues (peak periods only). Parking is maintained on the west side between 18th Avenue and 25th Avenue, and between 13th Avenue and 15th Avenue. Curb parking can be provided on both sides of the street (except for peak periods) between 11th and 13th Avenues.

The conversion of 25th and 26th Avenues to two-way traffic operations between 2nd and 4th Streets basically entails converting the south lane on 25th Avenue to eastbound traffic, and the north lane on 26th Avenue to westbound traffic. A short curb-parking ban is needed on 26th Avenue to facilitate alignment of the westbound lane through the 4th Street intersection.

Throughout the process of developing the implementation plan, discussions were held with local residents and others affected by the plan, representatives of community associations and business groups. Communities, such as Mount Royal, have undertaken a community traffic study. The development of the traffic plan for the one-way conversion attempted not to compromise the strategies embodied in the local traffic study, or anticipate future countermeasures that can be taken if undesirable short-cut traffic patterns occur. Many of the adjacent communities have concerns regarding the change in traffic pattern, potential increases in traffic delays and increased traffic flows that may occurr.

During the project, a variety of communication techniques were used to inform the public about the proposed plan to convert 2nd and 5th Streets to two-way traffic operations. These included phone conversations, community association meetings, group meetings, information brochure, and a public open house that was sponsored by the City of Calgary. Two evening public open houses were held in September 2001 under the auspices of the Cliff Bungalow-Mission Community Association to raise awareness and gather comment on community planning issues. Using comment sheets, the public was asked to state the advantages and disadvantages of the proposed conversion, and to identify issues that they believe need to be addressed in the planning for the conversion. Of the 56 comment sheets received, 23 people expressed support for the conversion and 10 were opposed; 23 did not state a specific position but raised particular issues that they felt needed to be addressed.

On Saturday, November 17, 2001, an open house was held by the City of Calgary to gather public input on the implementation plan for the one-way conversion project. Notices advertising the open house were delivered to 7,700 households in the Connaught, Victoria Park, Cliff Bungalow-Mission and Erlton areas. News articles were distributed to community newsletters, and a city-wide ad was placed in the Calgary Herald. Notice of the open house was also sent by first class mail to suburban community associations and approximately 250 individuals who either attended the open house in September, participated in the small group meetings and/or sat on the previous Inner City Transportation Study Round Table. Approximately 125 people attended the open house. Of the 80 comment sheets returned, 46 expressed concern with the fundamental concept of converting the streets to two-way traffic flow. The remainder expressed support for the project, or offered some specific suggestions for improvements to the plan.

Implementation of the traffic plan for converting 2nd and 5th Streets and 25th and 26th Avenues to two-way traffic operations requires changing traffic signs and signals, road markings and some civil construction work. The cost to implement the project, including a media program, totals **$1,340,000.**

1.2 MAJOR FINDINGS

There are two major findings outlined in this section and they relate to the following subjects:

- Public understanding
- Technical analysis

The process for implementing Council approved policy and vision is a moving target due to normal business, residential development and political cycles. Politicians change, people move and businesses relocate, get larger or change ownership. Recognizing these changes, people in a democratic society typically demand full explanations of governmental projects and programs. During the development of the Inner City Transportation Plan, the stakeholders vision did not address micro-level matters and, as a result, residents, business owners and interested citizens had significant concerns about parking, "how do I get home", "can I still get to Safeway", and other personal mobility issues. The public communications process was designed to provide these details and was successful in that many changes or ideas were incorporated into the traffic plan. The most interesting comments were concerning the goals and objectives of the Calgary Transportation Plan as many people were not familiar with how they would be achieved. The City of Calgary administration team working on other ICTS projects are now much more cognizant of the public's expectations, and will endeavor to provide process details starting from a vision and goals to actual implementation.

The traffic analysis of the proposed traffic plan indicated that converting 2nd Street and 5th Street to two-way traffic operations could be accommodated, as there was effectively no loss in lane-capacity even though the north-south capacity would be split onto two roads. The traffic analysis that included the detailed assessment of intersection volume to capacity relationships indicated some operating difficulties at key intersections. These problems have been mitigated through the proposed implementation of parking restrictions, either on a peak hour basis or permanently. Following the implementation of projects similar to this one-way conversion, it takes several months for the new traffic patterns to stabilize as motorists become accustomed to the changes. As a result, an on-going monitoring process will be needed to address any queuing, delay or short-cut traffic problems, and make changes where possible.

1.3 RECOMMENDATIONS

There are three broad recommendations emanating from this project:

1. As per Council direction, the traffic plans and strategies outlined in this report be implemented as soon as practical.

2. That a media program be implemented prior to the traffic pattern changes in order to notify the public of the impending revisions to traffic operations in the study area.

3. That a monitoring program be implemented by the Administration, and to report back to Council after a year's experience with the new traffic patterns.

2.0 INTRODUCTION

2.1 PROJECT ORIGIN

Calgary City Council approved the Calgary Transportation Plan (CTP) in May 1995 following an exhaustive public participation program and a comprehensive technical process. This process was called the GoPlan and its purpose was to develop a strategic city-wide transportation network and land use plan that would provide for future growth up to a population of 1.25 million.

While the CTP was at the strategic level, one of the derivatives of the Plan was a sub-area transportation study entitled the Inner City Transportation Study (ICTS). This study focused on a sub-system management strategy that addressed the hierarchical road network, transit priorities, and land use issues. The foundation of the ICTS was the CTP vision of achieving, over time, a reasonable equilibrium between (1) mobility, (2) affordability and (3) quality of life.

In July 2000, Calgary City Council approved the Inner City Transportation System Management Strategy (ICTSMS). This strategy contained a series of recommendations aimed at improving the safety of inner-city streets, increasing the accessibility to local residences and businesses, and enhancing the ambiance of adjacent neighbourhoods. The report considered by Council in June 2000 represented two-thirds of the ICISMS. One of the Council approved recommendations was the conversion of the following streets from one-way to two-way traffic operations:

- 2nd Street S. W. from 10th Avenue to 26th Avenue
- 5th Street S. W. from 17th Avenue to Elbow Drive
- 25th and 26th Avenues from 2nd to 4th Streets.

Exhibit 2.1 indicates the site context of the South Downtown and Mission-Cliff Bungalow area and the location of the streets affected by the proposed change in traffic operations.

2.2 PROJECT SCOPE

Therefore, the scope of this project was the preparation of a traffic management plan to implement the above Council direction. The preparation of the traffic management plan for the conversion of 2nd and 5th Streets S. W. to two-way traffic operations entailed the following major tasks:

CANADIAN PACIFIC RAILWAY
10 AVE. S.W.
11 AVE. S.W.
12 AVE. S.W.
13 AVE. S.W.
14 AVE. S.W.
15 AVE. S.W.
17 AVE. S.W.
18 AVE. S.W.
19 AVE. S.W.
20 AVE. S.W.
21 AVE. S.W.
22 AVE. S.W.
23 AVE. S.W.
24 AVE. S.W.
25 AVE. S.W.
26 AVE. S.W.
29 AVE. S.W.
COLLEGE LANE
ROYAL AVE SW
HOPE ST. S.W.
CLIFF ST. S.W.
HILLCREST AVE.
ELBOW DR. S.W.
ELBOW RIVER
ROXBORO RD.
PARK LANE
GARDEN CR.
1 ST. S.W.
2 ST. S.W.
4 ST. S.W.
5 ST. S.W.
6 ST. S.W.
7 ST. S.W.
CALGARY
ROADS
STUDY AREA
SITE PLAN
EXHIBIT 2.1

1. Documenting the existing traffic control devices on these streets to determine the following:

- Those traffic signs that required orientation reversal for the new traffic pattern
- Parking regulations noting the locations of curb parking which may be affected by the new traffic pattern, where the provision of new left turn lanes may be required at key locations
- Traffic signal equipment to identify the need for additional signal poles and heads for the new traffic pattern
- Road markings.

2. Preparing a traffic control plan for the conversion to two-way traffic options, including design alternatives at certain locations.

3. Analyzing the traffic operations at key intersections to assess the feasibility of the traffic control plan.

4. Undertaking a public consultation program to secure public input on the traffic control plans.

5. Preparing costs estimates for implementing the two-way traffic plan.

6. Documenting the project findings.

2.2 PROJECT PROCESS

The initial task completed was a traffic control device inventory that provided the information noted above. This information enabled the preparation of a base plan on which the new traffic control plan could be prepared. This information was gathered during the spring and summer of 2001.

Conceptual plans were prepared for key traffic pattern transition locations and major intersections. The critical transition location was the intersection of 5th Street and 17th Avenue. At this location, the one-way southbound traffic pattern is terminated and meets the northerly end of the two-way traffic pattern. Other important transition locations were as follows:

1. Elbow Drive and 5th Street – provision for northbound left turn movements from Elbow Drive on to 5th Street

2. 4th Street at Elbow Drive/26th Avenue – provision of two-way traffic operations on 26th Avenue, and consideration of traffic management concerns related to traffic calming on Mission Road from the Rideau-Roxboro Community.

The northerly termination of the proposed two-way traffic pattern on 2nd Street was nominally 10th Avenue S. W. Recognizing that 2nd Street ends at this location due to the railway tracks, the design of the transition was very simple. In fact, the block on 2nd Street, between 10th and 11th Avenues, had been converted to two-way traffic operations several years earlier. Therefore, in practical terms, the northerly transition of the new two-way traffic pattern on 2nd Street was 11th Avenue.

One of the key design features that enable a safe conversion of a street system from one-way to two-way traffic operations is the provision of left turn lanes at major intersections. Locations where this design feature was considered were at Elbow Drive and 5th Street, and on 2nd Street at 11th, 12th and 17th Avenues.

In the fall of 2001, a focus group was formulated to assist in identifying concerns regarding the traffic pattern change, and to provide input on the traffic control plan concepts and alternative layouts for key locations. The focus group was comprised of representatives from adjacent communities. This process is discussed in further detail in Section 11.

Based on the information gathered regarding existing traffic control devices, and the concerns identified by the focus group, a traffic management plan was prepared for 2nd Street, 5th Street, 25th Avenue, 26th Avenue, and the northerly end of Elbow Drive. The plan also made provision for bicycle movements on 2nd Street based on the 1996 Calgary Cycle Plan, as modified by the Inner City Transportation System Management Strategy.

Following the preparation of the traffic management plan, an open house was held on November 17, 2001 to enable the general public to provide comment on the new planned traffic pattern and the alternatives proposed for several key locations along these two streets. Section 4 outlines the development of the basic traffic management plan and the alternatives created during the design process. Sections 6, 7 and 8 describe in detail the traffic control plans for 5th Street, 2nd Street, and 25th and 26th Avenues.

3.0 BACKGROUND INFORMATION

3.1 INNER CITY TRANSPORTATION STUDY

The key reference to the initiatives contained in the ICTSMS is the following statement taken from the Calgary Transportation Plan:

> "Maintaining healthy and vibrant communities capable of adapting to change, and attracting a reasonable share of growth is a key thrust of the proposed land use strategy. In order to achieve the forecast levels of growth in established communities, the impact of the road hierarchy, its operation and adjacent land uses between the "skeletal" network level should be reviewed. There are aspects of the existing hierarchy (e.g., widening setbacks, reverse lanes, road classifications, etc.) that may be at odds with community objectives related to quality of life and the ongoing viability of local businesses adjacent to roadways. These have to be considered in the context of city-wide goals as expressed in the Calgary Transportation Plan; however, it is recognized that attracting growth into existing communities is just as dependent on certainty, and quality of environment as it is in the new suburbs."

As indicated earlier, the initiatives contained in the ICTSMS attempt to balance the triangle of mobility, cost and quality of life. These strategies are based on the following principles:

1. A priority must be given to the safety, integrity and health of communities in all local and city-wide transportation matters.
2. It is not in the City's best interest to jeopardize the quality of life of Inner City and Downtown residents, business and cultural communities by attempting to provide ever increasing vehicular access to the Downtown.
3. The strategies must support the key policies in the CTP.
4. The capacity of the existing arterial road network within the Inner City should be enhanced through increased efficiencies being achieved by operational changes, and not by expansion using major road construction programs.
5. The redefinition of roads and street classifications must be used as a means to implement the CTP balance triangle to reduce traffic movements to a more sustainable level.

[1] Inner City Transportation System Management Strategy, The City of Calgary, Land Use and Mobility, June 2000.

6. Land use and development decisions in both inner city and suburban communities, based on the goals of the CTP, must be a priority to reduce the dependency on the automobile.
7. Priority must be directed to funding transportation system improvements.
8. Calgarians must be made aware of the negative effects of traffic on communities.
9. Pedestrian and cycling opportunities must be developed to provide a more attractive travel option.[1]

From a community perspective, 2nd Street lies within the Mission area and 5th Street is in the Cliff Bungalow neighbourhood. The 4th Street commercial district provides the interface between these two communities, and they are now formally known as Cliff Bungalow-Mission. Historically, 2nd and 5th Streets were two-way local collector roads serving these residential communities.

The origin of the one-way traffic pattern implemented in this area was the 1967 Calgary Transportation Study. The recommended road network proposed a number of one-way street systems for Downtown Calgary, including the following:

1. 4th and 5th Streets S. W. – 4th Street was to operate in a one-way northbound traffic pattern from the Mission Bridge into the Downtown, and 5th Street was to be the companion one-way southbound roadway including a new Elbow River Bridge to connect to 4th Street, south of the river.
2. 1st and 2nd Streets S. W. – 1st Street was to operate as a one-way northbound street from 17th Avenue into the Downtown, and 2nd Street was to be a one-way southbound street, terminating at 17th Avenue.

The construction of the 5th Street underpass, linking 9th Avenue to 10th Avenue, initiated the implementation of the existing one-way street pattern. The implementation of the one-way traffic operations on 5th Street reflected the recommendations contained in the 1967 Study; however, the one-way traffic pattern on 4th Street was not created due to the concerns of local businesses. As a result, a one-way northbound traffic pattern was developed on 2nd Street; however, its northern terminus was at 10th Avenue S. because an underpass of the railway had not yet occurred. In fact, subsequently the planning for the 2nd Street underpass was abandoned as a result of the ramp access structure from 9 ave to the City Centre Parkade (formerly called the Gulf Canada Parkade).

The 2nd and 5th Streets one-way system is somewhat dysfunctional due to the discontinuity of 2nd Street. Currently, the daily traffic flow on 5th Street, south of 17th Avenue is in the order of 14,000 vehicles/day. The comparative traffic volume on 2nd Street is 5,000 vehicles/day. The two-way traffic flow on 4th Street in this area is about 18,000 vehicles/day.

Therefore, the rationale for the conversion of these streets from one-way to two-way traffic operations is as follows:

1. It enhances the livability of the residential uses in the Cliff Bungalow-Mission area.

2. It improves the accessibility to the area, in that traffic circulation patterns are more flexible, and easier to understand. As a result, motorist's travel distances to their destinations tend to be shorter.
3. It maintains a reasonable balance of mobility for those commuters oriented to the Downtown.
4. It recognizes that the existing one-way system has certain dysfunctional characteristics.

3.2 EXPERIENCE IN OTHER CITIES

Over the past decade, there have been over 25 cities in North America where, in the central business district, one-way street systems have been converted to two-way traffic operations. These cities have ranged in size from small communities, such as Sheridan, Wyoming (population 14,000), to large cities such as Buffalo, New York (metropolitan population of 1.2 million)[2]. In Canada, Edmonton is the largest city that has undertaken these street system conversion projects. Most of these cities can be characterized as having downtowns where the economic activity has declined due to the sub-urbanization of shopping opportunities, and employment.

As a result, many of the two-way conversion projects were part of an integrated business revitalization program that included streetscape improvements and other components. For example, in the early 1990's, the downtown core of Kitchener, Ontario was being affected by both the recession and the sub-urbanization of shopping, such that the store front retail vacancy was about 12 percent, and the office vacancy rate was 35 percent. The Mayor's Task Force on the Downtown developed a 47-point Action Plan to address the business vitality problems. There were two transportation actions of significance:

1. Converting Duke and Charles Streets to two-way traffic operations, and
2. Removal of 305 parking meters and replacement with a two-hour time limit zone.

From 1995 to 2000, the results of the Action Plan were as follows:

- Office vacancy rates have declined from 35% to 11%
- Street front retail vacancy rates have declined from 12.4% to 7.8%
- New housing units have increased by about 700 units
- Building permits value totaled $60 million.[3]

[2] Survey of Communities Converting Downtown Streets from 1-Way to 2-Way Traffic Circulation, Hyannis Main Street Business Improvement District, December 1999.

It should be recognized that the one-way couplet conversion and the free parking program were not the key contributors to the turn-around of Downtown Kitchener, they were just part of a multi-faceted redevelopment action plan.

Some of the other major North American cities that have implemented one-way system conversions are as follows:

Buffalo, New York – Metropolitan Population: 1.2 million

The City's Main Street was a pedestrian mall surrounded by a one-way street system. The City began converting streets in the downtown to two-way traffic operations in 1996. The first street, Chippewa Street was a former successful retail district in the 1960's, but over time the area became a local "red-light" district. With the street conversion and investment, the area is now a major entertainment district.

Edmonton, Alberta – Population: 900,000

In 1972, a one-way street system was implemented in Downtown Edmonton as part of a plan to improve traffic flow. The one-way streets were considered to provide an improvement in capacity in the order of 20 to 50 percent because turn delays at intersections were minimized. As part of the Capital City Downtown Plan, it was proposed to convert to two-way traffic operations the one-way systems of 102 and 103 Avenues, and 105 and 106 Streets. These roadways would be classified as collector streets. The principal objectives of the one-way street conversions were as follows:

- Improve the pedestrian environment
- Improve the access to businesses and increase on-street parking
- Improve traffic circulation through the downtown
- Encourage residential and commercial development.

The two one-way street system conversions were implemented in August 1998. Some of the principal findings to date are:

- Traffic speeds were reduced.
- Pedestrian collisions increased by 7 percent; however, the time period of the "before and after" analysis was only nine months. Preferably, traffic collision studies should include a 6 year period – 3 years before and 3 years after.

[1] McBride, John, "Is Free On-Street Parking the Answer", Canadian Parking Association Annual Conference, St John, New Brunswick, October 2001

- Vehicular collisions decreased by 4 percent.
- On-street parking increased by 170 stalls.
- Traffic congestion increased on some street segments resulting in a diversion to adjacent arterial streets.

It was generally concluded that the conversion of one-way streets to two-way streets proved to be a positive initiative without any adverse effects on traffic operations.[4]

Lubbock, Texas – Population: 200,000

The downtown area of Lubbock is a mix of one-way and two-way streets. The one-way streets were established in 1960 in an era when the retail and commercial business was thriving and traffic was increasing. In the early 1970's retail business began moving to the suburbs. In March 1970 a major tornado destroyed a portion of the CBD, and some of the businesses did not rebuild.

In 1994, the City received a petition requesting the conversion of Main Street and the companion 10th Street to two-way traffic operations. The project analysis indicated the following advantages and disadvantages:

1. Advantages

- Less confusing to motorists, especially visitors
- Improved access to properties
- Reduced travel distance to a destination.

2. Disadvantages

- Implementation cost
- Increased congestion
- Poorer two-way signal progression.

[4] Hassan, Howaida, Alan Brownlee and Brice Stephenson, "A Study of One-Way to Two-Way Streets Conversion in Downtown Edmonton", Canadian Institute of Transportation Engineeers, Calgary, Alberta, May 2001.

The one-way conversion was implemented in 1995. The results of the one-way conversion were as follows:

1. Traffic volumes have remained about the same

2. Traffic accidents have increased about 10%

3. Businesses have experienced a modest growth in activity after several years of decline.

Other streets are now being considered for conversion to two-way traffic operations.[5]

Toledo, Ohio – Population: 323,000

In the late 1990's, the City converted three streets to two-way traffic operations, and more are planned for the future. Included in the street modifications were the removal of turning lanes, and the addition of angle parking and streetscape features. Building vacancies have decreased some buildings are being sold for restaurants and shops. No problems have been reported.

On balance, the experience in one-way street conversion to two-way operations has been positive, however, the improvement in the downtown vitality has resulted from a multi-action revitalization plan.

[5] Hart, Jere, "Converting Back to Two-Way Streets in Downtown Lubbock", ITE Journal, Institute of Transportation Engineers, August 1998.

4.0 ALTERNATIVES DEVELOPMENT

4.1 CRITICAL ELEMENTS

In developing a traffic plan for the conversion of 2nd and 5th Streets S. W., the critical elements of such a plan must consider the following:

1. Basic road cross-sections – the widths of the roads included in the project range from 9.8m to 13.4m. The road widths enable only one-travel lane for each direction of travel, and parking.

2. Transitions – the critical transition point is at the intersection of 5th Street and 17th Avenue. At this location, the one-way operations on 5th Street must be converted to two-way traffic flow. It is important that the conflicting movements be channelized into turning lanes, and that physical islands be constructed to enable placement of the necessary traffic control devices to designate the turning movements. In addition, a turning lane is proposed for Elbow Drive at the south terminus of the current 5th Street one-way system to facilitate northbound traffic to turn on to the proposed new two-way traffic street. It is important to make the best use of 5th Street for two-way traffic and the left turn lane on Elbow Drive facilitates this operation.

3. Turning lanes at key intersections – in addition to the turning lanes needed at the transition points discussed above, left turn lanes are an important traffic operations feature for two-way traffic operations. Key intersections where left turn lanes were considered were on 2nd Street at 15th and 17th Avenues and on 5th Street at 23rd and 25th Avenues.

4. Curb parking – as indicated above, the ability to provide curb parking is a function of the basic street width and the need for turning lanes at key intersections. Fifth Street currently has curb parking primarily on the west side, and this switches to the east side south of 24th Avenue. There is residential frontage primarily on the west side of 5th Street in the area between 17th Avenue and 23rd Avenue. Curb parking is primarily on the west side of 2nd Street; however, there is parking on both sides of the street in the northerly segment of this street.

5. Bicycle path – the ICTSMS indicated that 2nd Street was an ideal connection between the Elbow Drive regional pathway system and the downtown. As such, the conversion of 2nd Street to two-way traffic operations, with a designated cycle corridor, creates a reasonably safe environment for this needed connection for cyclists. The provision of this cycle corridor will have an impact on the availability of curb parking and the provision of turning lanes at key intersections.

4.2 STAKEHOLDER COMMENTS

Several meetings were held with representatives of community and business groups to review the project scope and process, and to solicit input concerning the traffic management plan for the conversion of 2nd and 5th Streets to two-way traffic operations. The purpose of these meetings was to identify concerns regarding the traffic management plan and possible enhancements to the plan.

All aspects of the proposed traffic management plan for the two-way conversion were discussed at the Representative Small Group Meetings. Some of the specific issues discussed with the designated representatives were as follows:

1. Need for a northbound left turn lane at the intersection of 2nd Street and 15th Avenue. The initial traffic management plan proposed a left turn lane due to perceived traffic safety problems, but the community representatives also suggested that it might generate shortcut traffic.

2. Need for a southbound left turn lane on 5th Street at either 23rd or 24th Avenues. The initial traffic management plan proposed a left turn lane at 24th Avenue. Some of the local representatives suggested that it should be located at 23rd Avenue because it had a wider cross-section and it tended to function as a type of collector road. Subsequent consideration of curb parking impacts resulted in the elimination of a separate left turn lane in this area.

3. Provision for bike operations on 2nd Street. The background and the need for the cycle corridor on 2nd Street was reviewed with the representatives, and there was general support for this facility. It was deemed that the cycle operations would reflect the role of 2nd Street as a minor collector in essentially a residential area.

4. Need for parking restrictions. The insertion of the cycle corridor on 2nd Street required development of a 4.3 m shared travel lane for both motor vehicles and cyclists. Due to the width of 2nd Street, parking bans were included in the traffic management plan. Similarly, the provision of a left-turn lane on 5th Street at 23rd Avenue would have required a parking ban, in addition to those already existing on this route. The representatives indicated a need for a parking management plan that accommodated the loss of parking.

It should be noted that there were a number of other suggestions that were made by the representatives, some of which are contained in the traffic management plan.

5.0 TRAFFIC OPERATIONS ANALYSIS

5.1 BACKGROUND TRAFFIC FLOW

The traffic analysis undertaken in this project was part of a testing process to assess the functionality of the traffic control plan. Due to the direction from Council to implement the conversion of 2nd and 5th Streets to two-way traffic operations, there was no review of the traffic operations at the key intersections in the study area under baseline (existing) traffic as compared to the traffic conditions when the two-way traffic control plan is implemented.

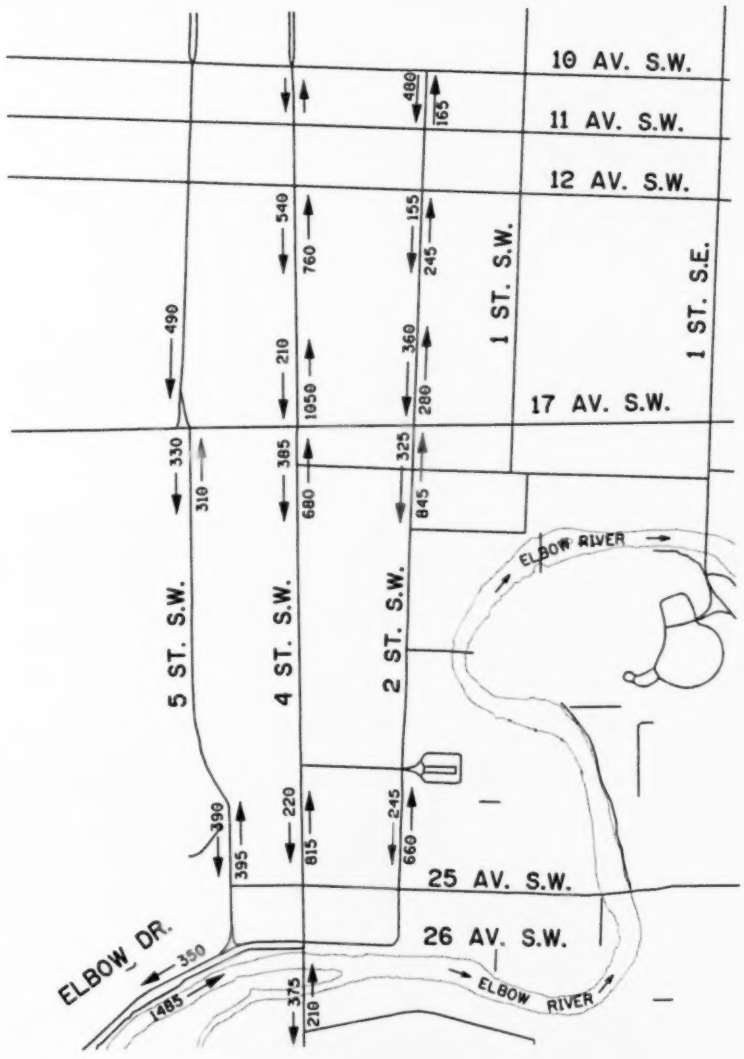
During the studies undertaken during the Inner City Transportation Study, forecast traffic flows were created using the CONTRAM transportation model that the City's transportation planners had developed and calibrated for the inner city. The model provided peak hour traffic movements at key intersections in the study area for the morning and afternoon peak periods. Two general traffic forecasts were created for a 2005 planning horizon; namely, traffic movements based on the current traffic patterns and the two-way conversion plan. The two-way conversion plan included the following one-way roadways:

- 2nd Street W. from 10th Avenue to 26th Avenue
- 5th Street W. from 17th Avenue to Elbow Drive
- 25th Avenue S. from 2nd Street to 4th Street
- 26th Avenue S. from 4th Street to 2nd Street.
- 11th and 12th Avenue one-way couplet from Olympic Way to 19th Street W.

Recognizing that the possible conversion of 11th and 12th Avenues to two-way traffic operations is part of a broader traffic management study, the traffic volumes used in the analysis of the 2nd and 5th Street two-way traffic plan were adjusted in the northerly portion of the study area to reflect the current traffic pattern on these two avenues.

Exhibits 5.1 and 5.2 indicate the predicted traffic flows at key locations in the study area for the two-way traffic operations. In general, the total volumes of traffic on 2nd, 4th and 5th Streets do not change significantly with the change in the traffic pattern. However, there are some changes in the use of the individual streets, as follows:

- Traffic movements on 2nd Street are higher, as compared to baseline traffic conditions, during both the morning and afternoon peak periods.



THE CITY OF CALGARY

POST ONEWAY CONVERSION VOLUMES

AM PEAK PERIOD

EXHIBIT 5.1

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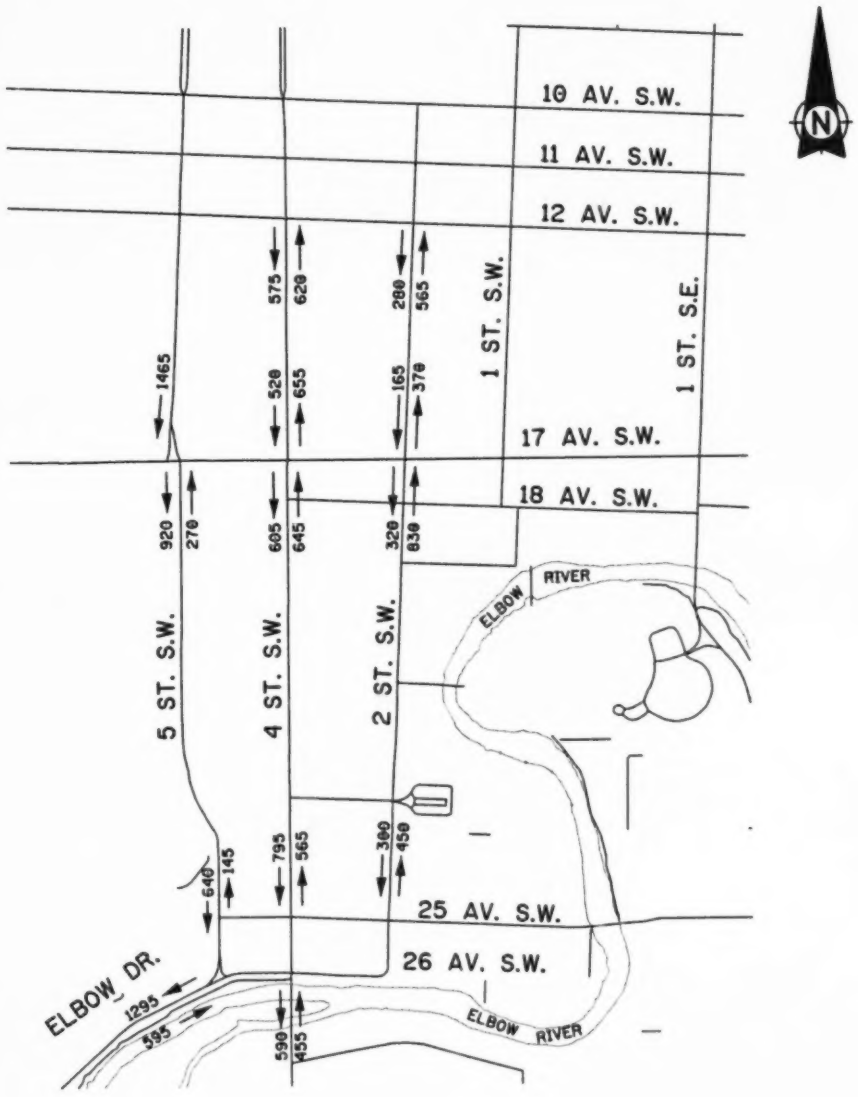

CALGARY ROADS

POST ONEWAY CONVERSION VOLUMES

PM PEAK PERIOD

EXHIBIT 5.2

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DATE: 10-MAY-2002 15:01

- Traffic movements on 5th Street are higher during the morning peak period due to the addition of the northbound movements.

- Traffic movements on 5th Street are lower during the afternoon peak due to the limitation of southbound capacity to one lane.

- Traffic movements on 4th Street tend to be lower due to changing traffic movements at 17th Avenue (additional EB to NB movements that originated from 5th Street), and at 26th Avenue/ Elbow Drive (two-way traffic movements affecting intersection operations).

5.2 OPERATIONS ANALYSIS

The traffic operations at the key intersections in the study area were assessed using highway capacity software (Synchro5 and SimTraffic). The traffic analysis has been based on current signal timing plans, however, during this process, signal timings were optimized to aid traffic operations when found to be beneficial. As indicated earlier, the purpose of this analysis was to ensure that the traffic plan could accommodate the projected traffic. There were 14 signalized intersections that were included in the operational analysis. It should be recognized that traffic movements through a street system tend to display dynamic characteristics, such that as congestion occurs at specific points, the regular commuters that use the network during the peak periods divert to new routes to avoid delays.

The traffic analysis indicated that, during the morning peak period, there would be significant delays (level-of service F) to northbound movements on 2nd Street at 17th Avenue. The two-way operations, bicycle-lane operations and the provision of a separate left turn lane limit northbound capacity; hence the potential queuing problem. However there would be available capacity at the 4th Street intersection, which could accommodate some of the diverted traffic from 2nd Street. As a result of this analysis , the left turn at 17 ave was eliminated to accommodate two multi-purpose traffic lanes and the extra space for bicycle operations was also removed.

Similarly, there would also be delays to northbound traffic on 2 st at both 11th Avenue and 12th Avenue where turning traffic affects through movements. This can be alleviated by imposing short parking restrictions on the approach to and beyond the intersection, such that through traffic can bypass turning traffic. This, however, may affect the movement of bicycles in the widened traffic lane shared with vehicle movements. There are also delays that may occur at the intersection of 2nd Street and 25th Avenue for westbound movements, in particular, for right-turn traffic. This may be resolved be the creation of a short turning lane and through peak period parking bans.

During the afternoon peak period, the intersection of 4th Street and 26th Avenue/Elbow Drive will be the location where the major traffic delays will occur. The primary traffic movements affected by the delay are on the east approach to the intersection. It is the combination of left and through movements occurring

on a single approach lane that creates the delay. This intersection is a junction of several major travel patterns, all meeting at this intersection. These conflicting travel patterns are as follows:

- A north/south travel route for vehicular travel to and from Mission Road and 4th Street S.W.
- A north/south route for traffic that uses both Elbow Drive and 4th Street for trips to and from Downtown Calgary.
- An east/west route related to vehicular travel between Elbow Drive and 25th Avenue, with a trip origin or destination east of Macleod Trail.

As traffic congestion occurs in the afternoon peak period, some of the westbound through traffic on 26th Avenue may be able to be diverted to 25th Avenue and gain access to Elbow Drive via either 4th or 5th Streets.

6.0 5TH STREET PLAN

BASIC CONCEPT

During the initial review of 5th Street S.W., the existing parking arrangement was considered as a major issue for the local residents. Presently, the majority of the parking is located on the west side of 5th Street and, for the most part, it is to remain intact. At present, 5th Street is a two-lane road with a parking lane. The design concept is to convert 5th Street from one-way to two-way traffic operations by painting a yellow solid centre line over the existing white skip lane line for most of the road. There are two locations where left turn lanes were considered and locations where parking must be removed to facilitate the existing geometrics of 5th Street. The details are discussed below and the designs are indicated on **Exhibits 6.1 to 6.5.** The key aspects of the traffic plan are to revise traffic signs and signals to accommodate the two-way traffic operations.

6.1 5TH STREET AT 17TH AVENUE S.W.

This intersection changes significantly. The three southbound travel lanes approaching 17th Avenue S.W. remain in place; however, traffic will only be permitted to use the centre lane to proceed southbound. The west curb lane will continue to be a mandatory right turn lane for westbound movements on 17th Avenue. The east curb lane will be a mandatory left turn lane for eastbound movements to 17th Avenue. With a two-way operation south of 17th Avenue S.W., there will be one southbound lane and two approach lanes for northbound traffic. The east curb lane will be a mandatory right turn lane for traffic destined for eastbound movement onto 17th Avenue. The centre lane will be a mandatory left turn lane for traffic desiring to travel westbound on 17th Avenue S.W.

6.2 5TH STREET BETWEEN 18TH AND 22ND AVENUES

In these four blocks, 5th Street will operate with one southbound lane and one northbound lane. Parking will be permitted on the west side and the current restrictions will remain in place. The locations of the existing marked crosswalks will remain and additional signing will be added to reflect the existence of crosswalks for northbound traffic.

6.3 5TH STREET BETWEEN 22ND AND 25TH AVENUES

The alignment of 5th Street changes through these three blocks, and there is a left-turn demand at the intersections of both 23rd and 24th Avenues. During the public participation process, left turns were proposed at either 23rd Avenue or 24th Avenue. After much consideration, 23rd Avenue was considered to be the most appropriate location, recognizing that it is the designated collector road between 5th and 2nd Streets.

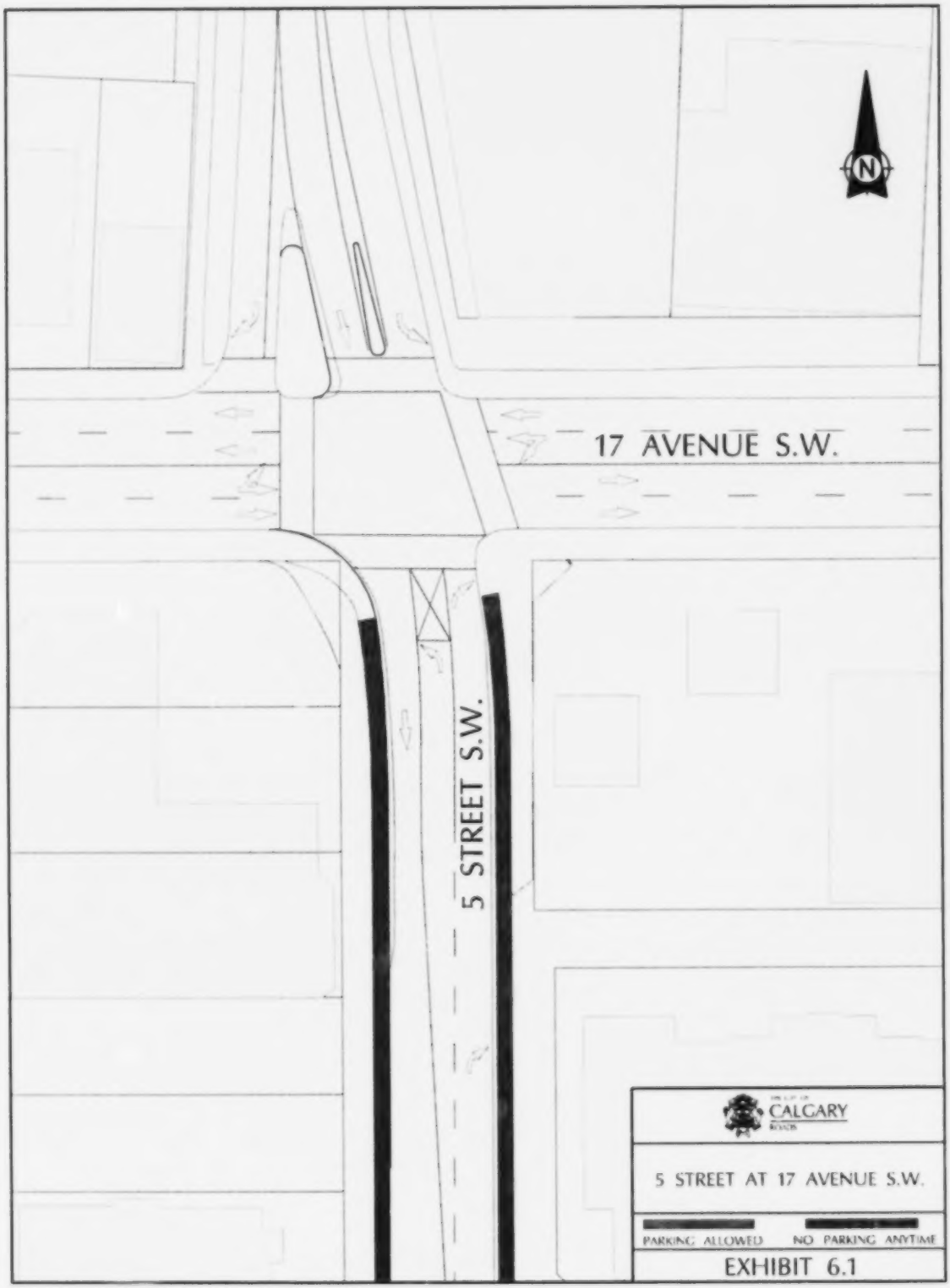
There are three homes fronting 5th Street which will not have adjacent on-street parking in the area between 22nd Avenue and 23rd Avenue. The on-street parking requirements for these residents can be met on 23rd Avenue. During subsequent conversations with the residents that front on to 5th Street, the need for adjacent on street parking became apparent. As a result, the left turn lane proposed for 5th Street at 23rd Avenue has been eliminated. The proposed traffic plan for 5th Street will allow vehicles to maneuver around left turning traffic at both 23rd Avenue and 24th Avenue. Approximately six parking stalls will be maintained on the east side of 5th Street. For the remaining segment of 5th Street there are No Parking Anytime signs posted, due to the curved alignment of 5 Street. Presently parking is removed in these blocks to ensure adequate lane width through the curve area.

6.4 25TH AVENUE S.W. TO ELBOW DRIVE

After significant review of this block, the traffic management plan provides only one travel lane for northbound traffic. Left turns will be banned at 25th Avenue. As a result, the design for southbound 5th Street provides for two travel lanes: a left turn lane for motorists wishing to proceed east on Elbow Drive and the curb lane allocated to traffic desiring to proceed south on Elbow Drive. Presently, there is no on-street parking in this block and this condition will remain.

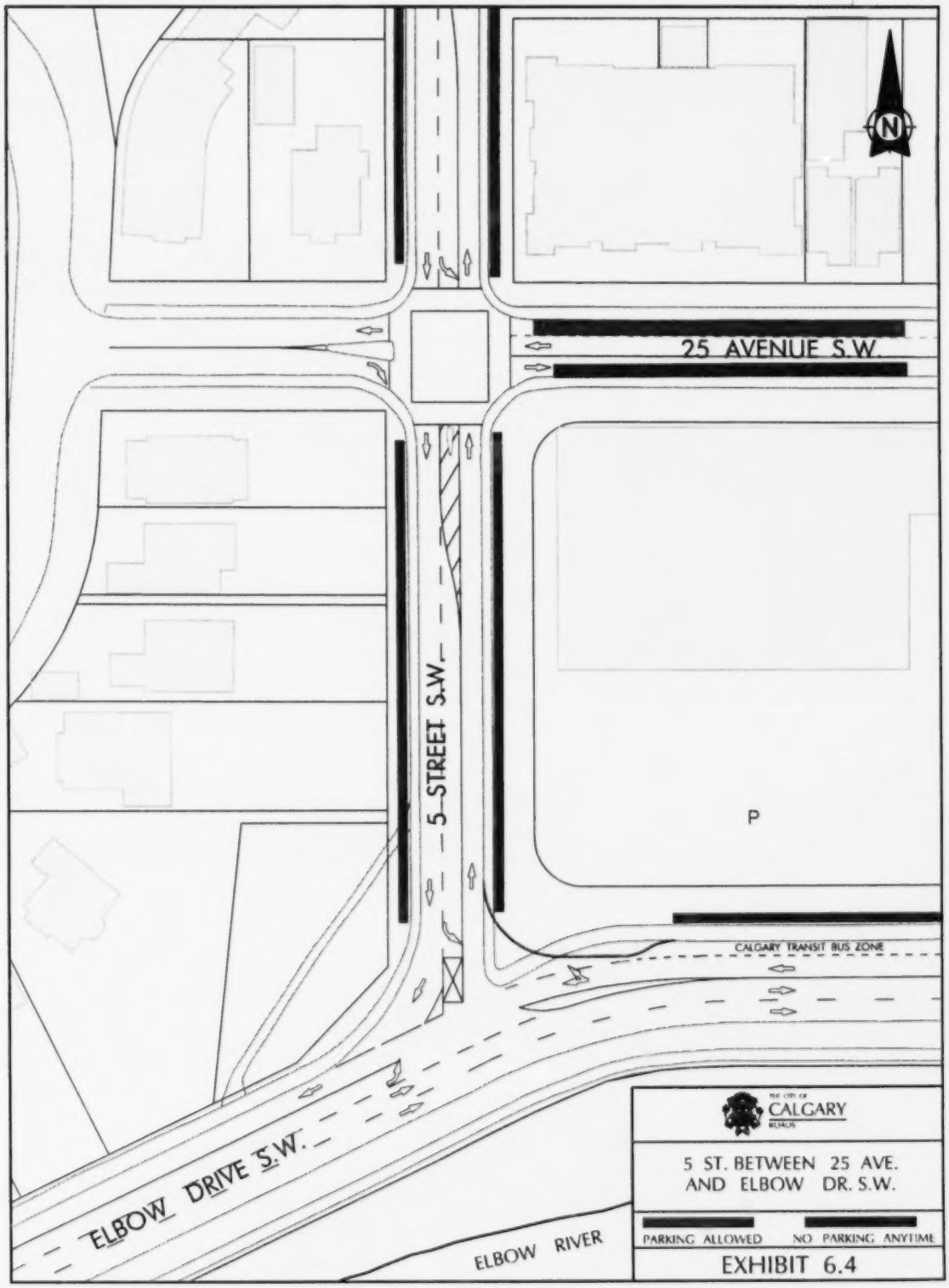
6.5 ELBOW DRIVE TRANSITION FOR 5TH STREET S.W.

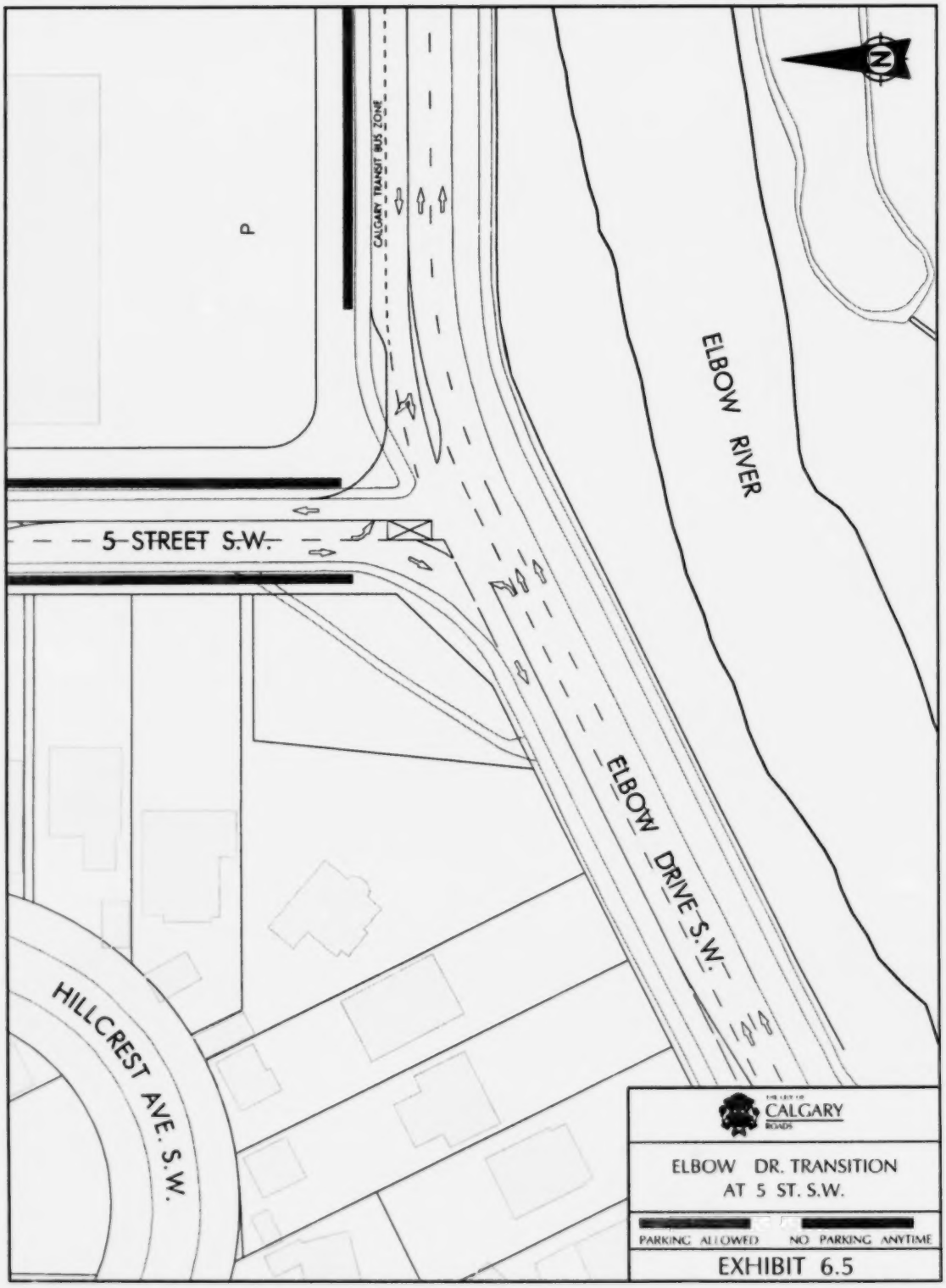
Various alternatives were considered to address the left turn requirements for eastbound traffic on Elbow Drive desiring to proceed on north 5th Street S.W. From a traffic safety perspective and considering the anticipated traffic volumes, it was determined that a separate left turn lane and two through travel lanes would be the most appropriate design.


17 AVENUE S.W.
5 STREET S.W.
CALGARY
5 STREET AT 17 AVENUE S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 6.1

18 AVENUE S.W.
5 STREET S.W.
19 AVENUE S.W.
19 AVE. S.W.
5A STREET S.W.
20 AVENUE S.W.
ROYAL AVENUE S.W.
21 AVE. S.W.
CLIFF STREET S.W.
5 STREET S.W.
22 AVE. S.W.
CALGARY
5 ST. BETWEEN 18 AVE.
AND 22 AVE. S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 6.2

22 AVENUE S.W.
N
5 STREET S.W.
23 AVENUE S.W.
4 STREET S.W.
P
24 AVE. S.W.
P
CLIFF STREET S.W.
5 STREET S.W.
25 AVENUE S.W.
THE CITY OF CALGARY
5 ST. BETWEEN 22 AVE. AND 25 AVE. S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 6.3


N
25 AVENUE S.W.
5 STREET S.W.
P
CALGARY TRANSIT BUS ZONE
ELBOW DRIVE S.W.
ELBOW RIVER
THE CITY OF CALGARY ROADS
5 ST. BETWEEN 25 AVE. AND ELBOW DR. S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 6.4


P
CALGARY TRANSIT BUS ZONE
5 STREET S.W.
ELBOW RIVER
ELBOW DRIVE S.W.
HILLCREST AVE. S.W.
N
THE CITY OF CALGARY
ROADS
ELBOW DR. TRANSITION
AT 5 ST. S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 6.5

7.0 2ND STREET PLAN

BASIC CONCEPT

2nd Street S.W. presently operates as a one-way road between 11th Avenue and 26th Avenue. The adjacent land uses range from institutional to single family, and this street provides both local access and network connections to Downtown Calgary. Currently, 2nd Street provides two lanes for movement of northbound vehicles, and curb parking exists on either one side or both sides of this collector roadway. The design criteria for 2nd Street involved changing the existing white lane line into a yellow centerline providing one lane each for both northbound and southbound traffic, and developing a shared bike operation. As a result, significant decisions were required for on-street parking and turning lanes at critical intersections. It was found during the inventory work for 2nd Street that the road width varied and the traffic plan reflects this fact. The existing crosswalks will be revised such that the associated traffic signs accommodate the two- way traffic. In addition, other traffic signs and signals will also have to be modified to facilitate the two-way traffic operations. The details are discussed below and indicated on Exhibits 7.1 to 7.5.

7.1 2ND STREET S.W. BETWEEN 11TH AND 13TH AVENUES

In these two blocks, there is sufficient width to provide parking on both sides, one travel lane in each direction and a shared bike operation. However, the parking will be restricted during the morning and afternoon peak periods to facilitate turning movements at the intersections of 11th Avenue and 12th Avenue. Effectively, the expected traffic flow and the traffic control on 2nd Street will be such that the street will function as a collector roadway.

7.2 2ND STREET S.W. BETWEEN 13TH AND 15TH AVENUES

The traffic pattern on 2nd Street in this area will involve an offset centreline to accommodate a traffic lane in each direction of travel and the shared bike operation. Parking will not be permitted on the east side and this will impact on-street parking for a 200-unit multi family complex. The proposed traffic plan includes the introduction of parking controls around the old Haultain School Park site to accommodate the local residents. Parking studies have indicated that non-residents are using this curb space.

7.3 2ND STREET S.W. BETWEEN 15TH AND 18TH AVENUES

This section of 2nd Street presented several challenges as left turns need to be accommodated at 17th Avenue. The traffic plan provides for "No Parking Anytime" controls on both sides of 2nd Street between 15th Avenue and 18th Avenue. This parking regulation is required to provide for multi-purpose traffic

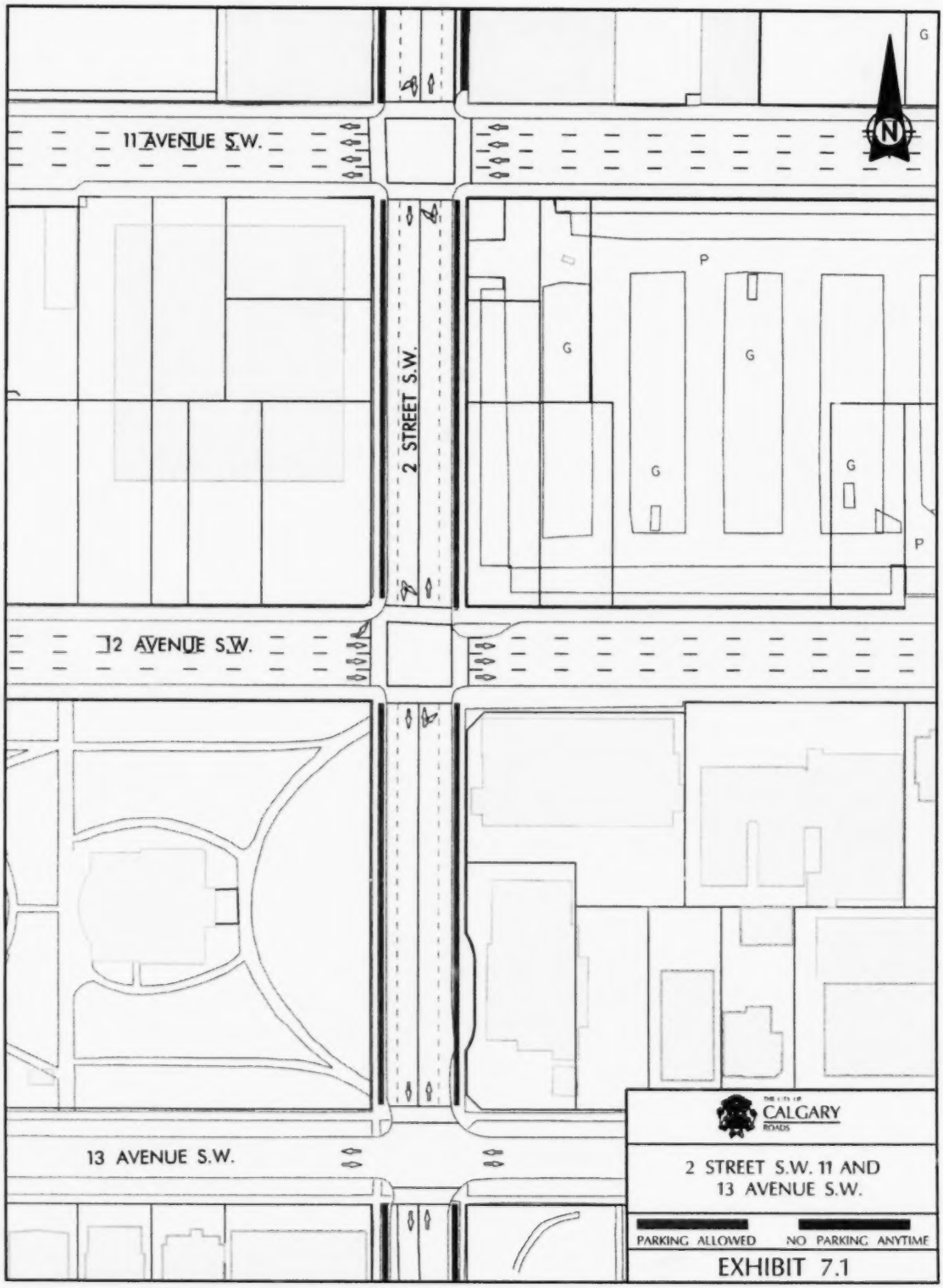
lanes at the 17th Avenue intersection. The shared bike-way operation will be discontinued in these two blocks as the minimum lane widths cannot be met. Bicyclists can still use the northbound and southbound travel lanes similar to any other street, however, this presents a discontinuity in the bicycle lane operation. This treatment is typical in other Canadian cities where there is insufficient width.

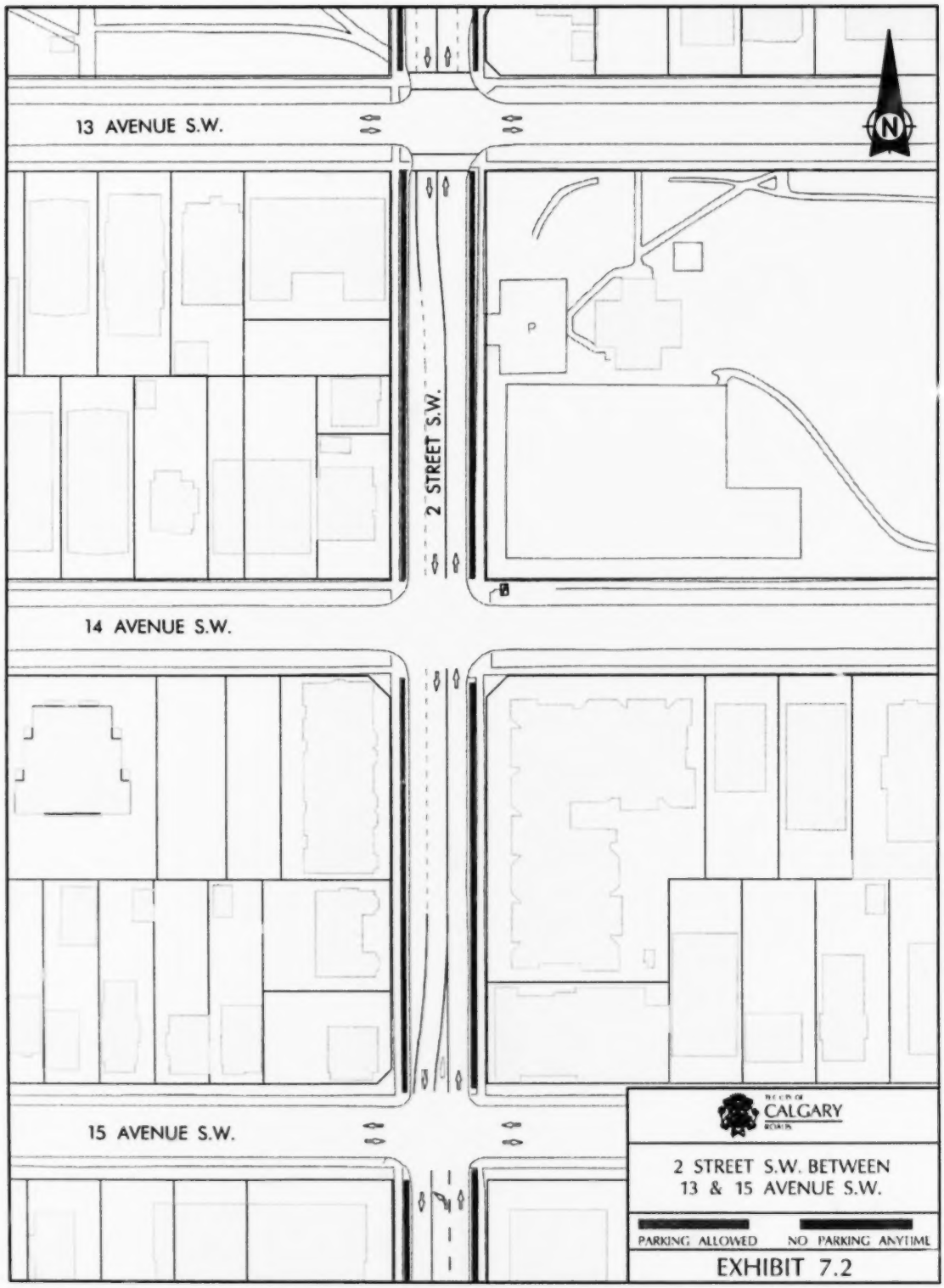
7.4 2ND STREET S.W. BETWEEN 18TH AND 24TH AVENUES

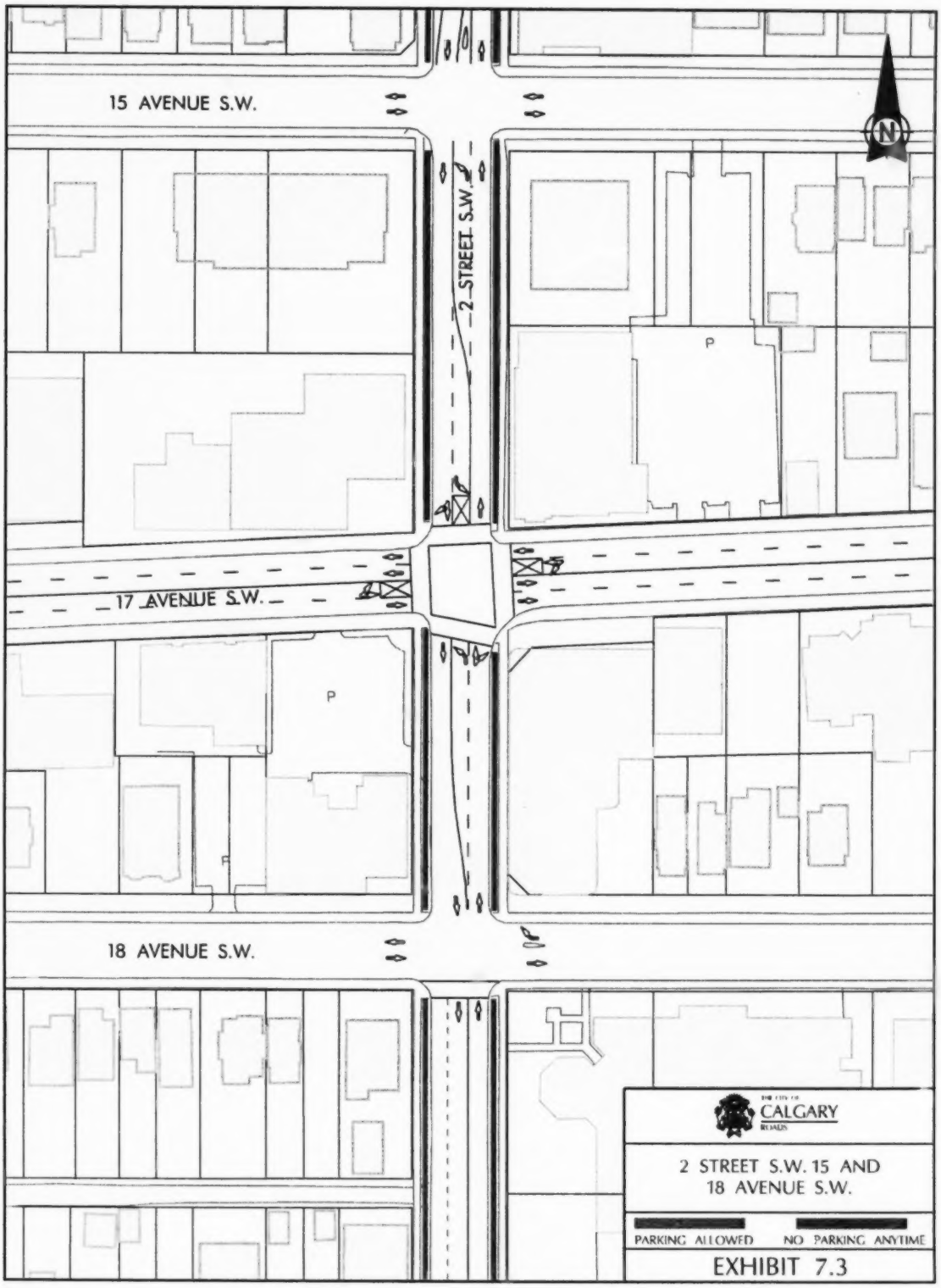
In these six blocks, the traffic control plan is reasonably consistent. Curb parking will be removed on the east side and parking will be permitted on the west side. The traffic plan proposes that the west curb parking be signed 2 Hour Parking, Monday to Saturday from 0900h to 2100h. This control will hopefully discourage local employees from using these stalls and, as a result, provide space for the affected residents. The centreline will be offset to accommodate the shared bike operation on 2nd Street. The majority of land uses on the east side of 2nd Street are institutional in nature and, as a result, have sufficient off-street parking to accommodate their demand.

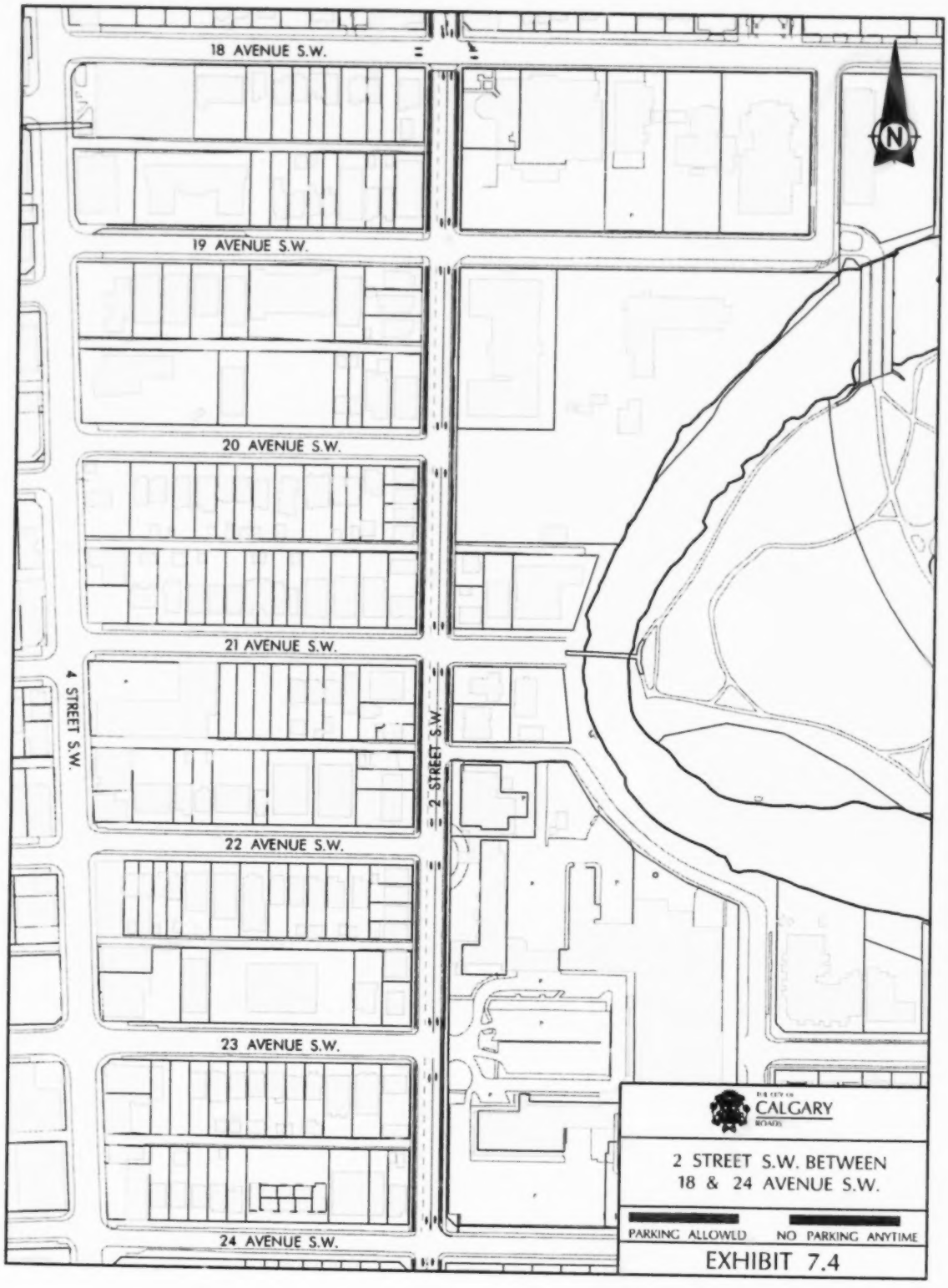
7.5 2ND STREET S.W. BETWEEN 24TH AND 26TH AVENUES

These two blocks presented a challenge due to the turning movements that occur at the intersection of 25th Avenue, and the need for on-street parking to accommodate several properties which front 2nd Street. As a result of these constraints, the shared bike operation cannot be implemented in these two blocks due to insufficient lane width, and the parking demand. In addition, Calgary Transit has a bus zone on the north side of 25th Avenue, directly east of 2nd Street. As a result, the apartment building on the northeast corner has no adjacent on- street parking and, with the layout as proposed, there would be space on 2nd Street. The intersection of 2nd Street and 25th Avenue will remain signalized and designed to accommodate southbound traffic on 2nd Street. The traffic control at the intersection of 2nd Street and 26th Avenue will feature a 3-way Stop Sign configuration. This design will provide a controlled intersection for pedestrians, cyclists and motorists.


11 AVENUE S.W.
2 STREET S.W.
12 AVENUE S.W.
13 AVENUE S.W.
G
P
N
THE CITY OF CALGARY
ROADS
2 STREET S.W. 11 AND 13 AVENUE S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 7.1


13 AVENUE S.W.
2 STREET S.W.
14 AVENUE S.W.
15 AVENUE S.W.
N
P
CITY OF CALGARY
2 STREET S.W. BETWEEN
13 & 15 AVENUE S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 7.2


15 AVENUE S.W.
2 STREET S.W.
17 AVENUE S.W.
18 AVENUE S.W.
P
P
P
N
CALGARY
2 STREET S.W. 15 AND
18 AVENUE S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 7.3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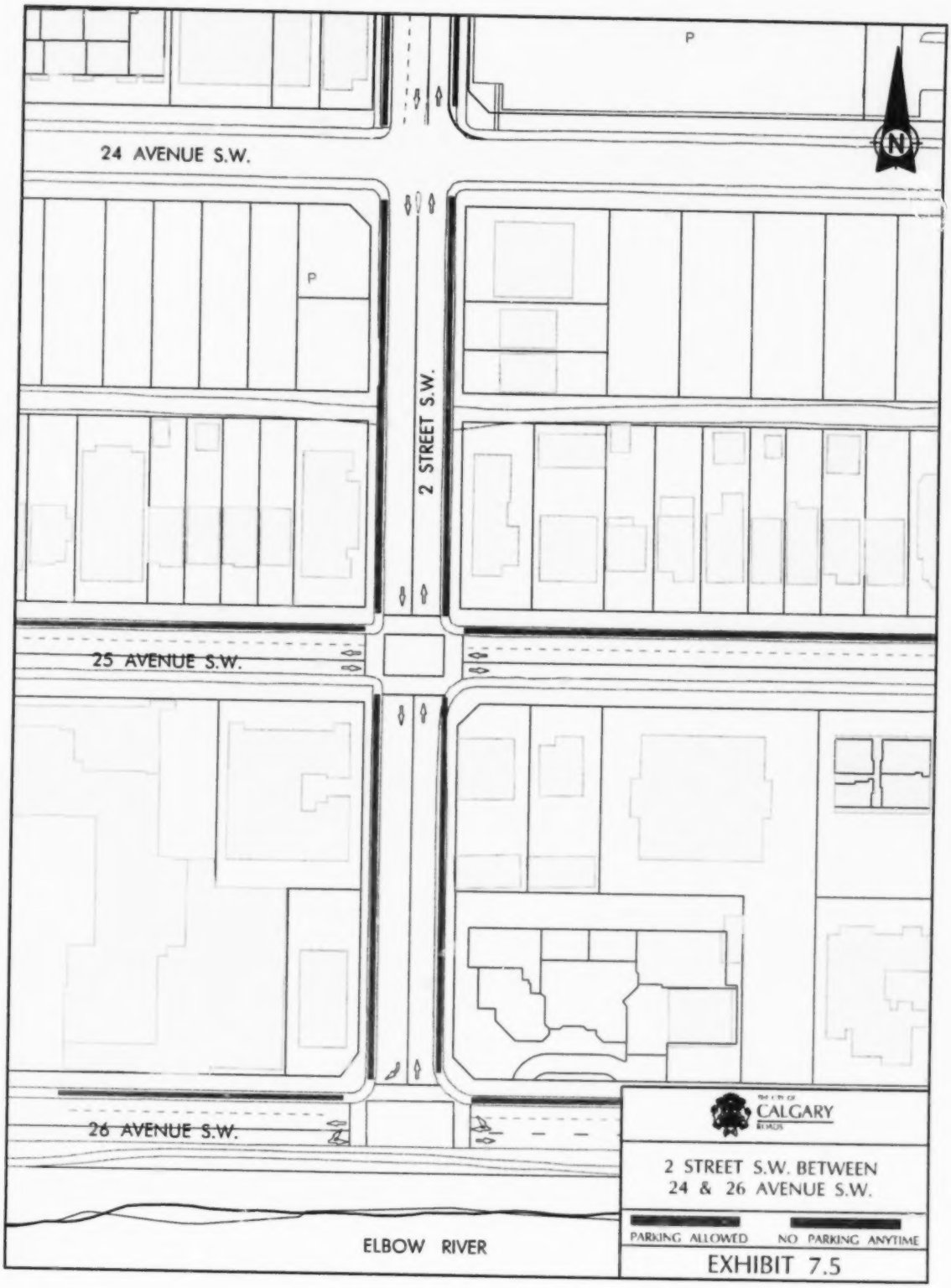
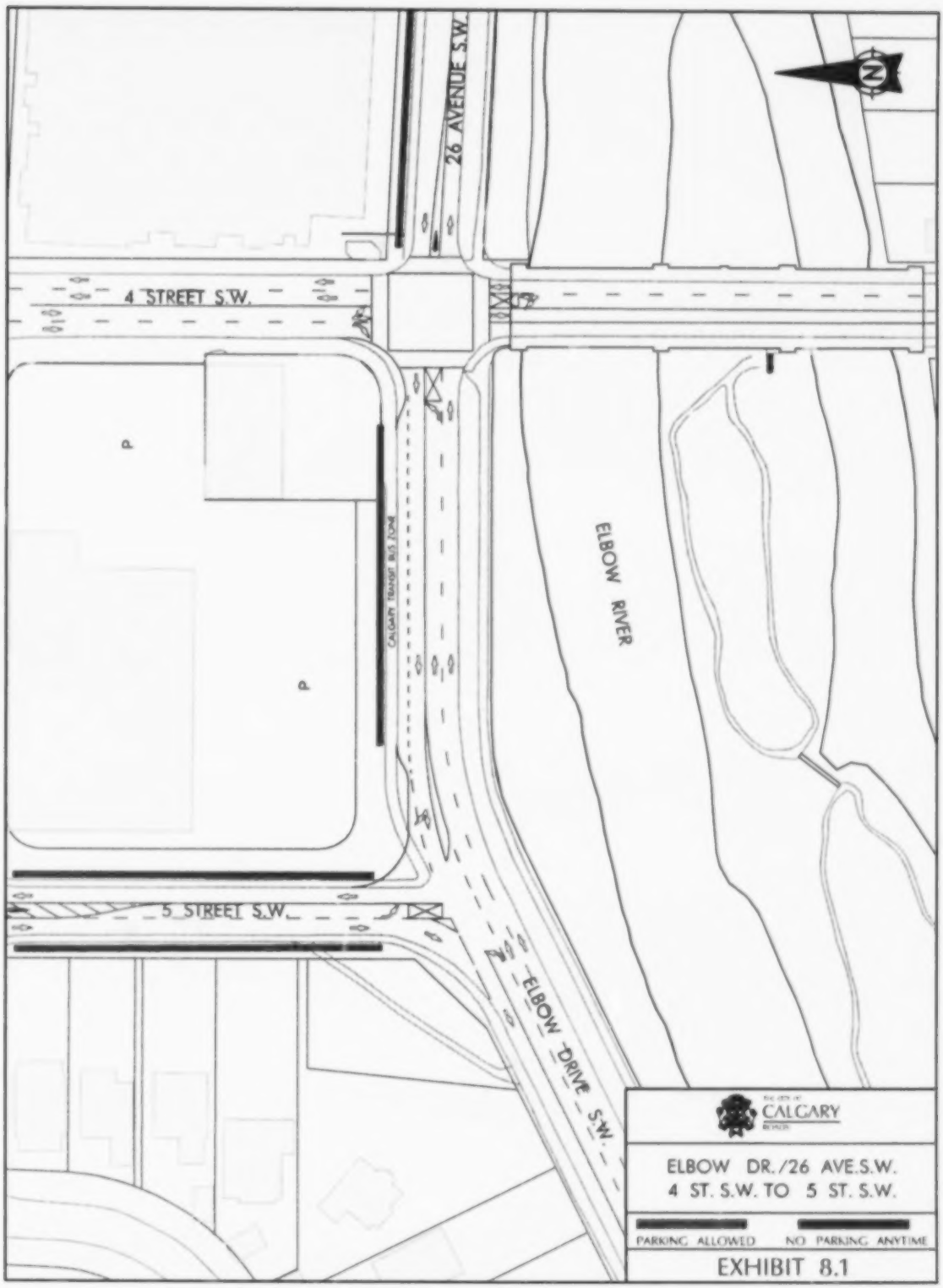
24 AVENUE S.W.
4 STREET S.W.
2 STREET S.W.
N
THE CITY OF CALGARY
ROADS
2 STREET S.W. BETWEEN
18 & 24 AVENUE S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 7.4

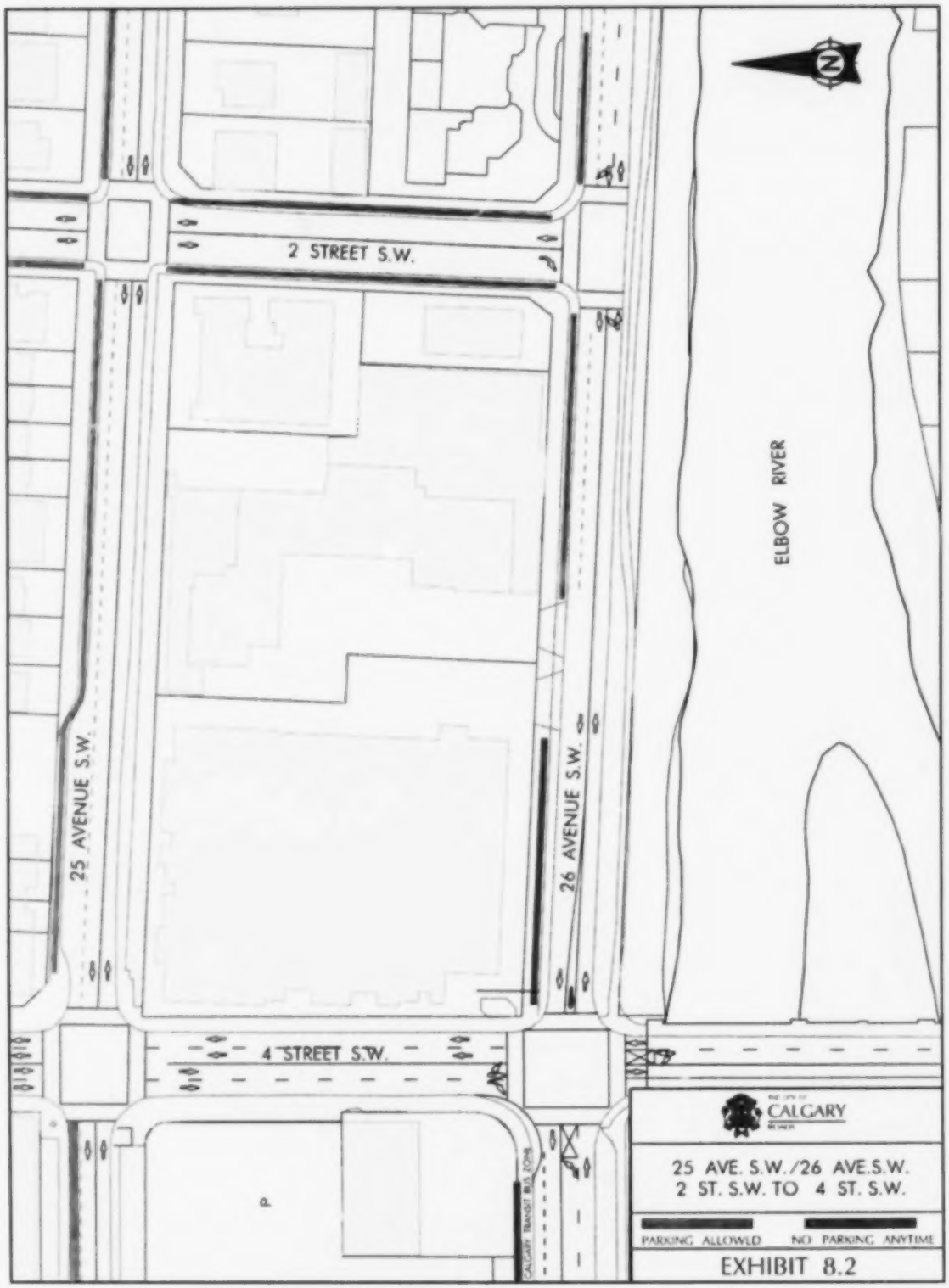

24 AVENUE S.W.
25 AVENUE S.W.
26 AVENUE S.W.
2 STREET S.W.
P
P
N
ELBOW RIVER
THE CITY OF CALGARY
2 STREET S.W. BETWEEN
24 & 26 AVENUE S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 7.5

8.0 25TH AND 26TH AVENUES S.W. STREET PLAN

The 2nd Street and 5th Street project included both of these roads to ensure that circulation in the area would be enhanced. In addition, it had been previously identified that 25th Avenue had a high traffic collision experience due to motorists ignoring the one way westbound control and then causing collisions with westbound vehicles. On 25th Avenue between 2nd and 4th Streets, there is sufficient width to provide a travel lane for each direction, and a parking lane on the north side. This is basically the same configuration as exists today, except that the south curb lane will be revised to accommodate eastbound traffic instead of westbound.

On 26th Avenue, the curb parking exists on the north side. The traffic plan maintains the curb parking on the north side, except for about five stalls east of the 4th Street intersection. The existing two eastbound travel lanes will be changed to one eastbound and one westbound lane. The parking ban indicated above facilitates the alignment of the westbound traffic lane to match the westbound lane, west of 4th Street. The designs are indicated on Exhibits 8.1 to 8.2.


26 AVENUE S.W.
4 STREET S.W.
P
P
CALGARY TRANSIT BUS ROAD
ELBOW RIVER
5 STREET S.W.
ELBOW DRIVE S.W.
N
THE CITY OF CALGARY
ELBOW DR./26 AVE.S.W.
4 ST. S.W. TO 5 ST. S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 8.1


N
2 STREET S.W.
25 AVENUE S.W.
26 AVENUE S.W.
4 STREET S.W.
ELBOW RIVER
CALGARY
25 AVE. S.W./26 AVE.S.W.
2 ST. S.W. TO 4 ST. S.W.
PARKING ALLOWED
NO PARKING ANYTIME
EXHIBIT 8.2

9.0 LAND USE IMPLICATIONS

The conversion of streets in a community from one-way to two-way can have many land use benefits. This not only enhances the vitality or the livability of a particular street in many subtle ways, but can also contribute to the overall revitalization of a community as well.

One-way streets can result in increased traffic flows and speed of traffic which can diminish the quality of life on a street. The conversion of two-way streets to one-way has been a traditional method of maximizing the efficiency of a traffic corridor to allow suburban traffic improved access to the downtown and inner city communities. This is particularly the case in inner city communities like Cliff Bungalow-Mission. Second Street (one-way northbound) and 5th Street (one-way southbound) provided easy access to the downtown and inner city for motorists originating in communities lying to the south of this community.

A site planning issue is the front-yard setback of houses to the street. Older communities like Cliff Bungalow-Mission frequently have houses fronting on flankage lots such as found on 2nd and 5th Street. These houses can be located much closer to the traffic on one-way streets. On the west side of 2nd Street, for example, the front-yard setbacks range from 1.0 meter (3 feet) to 3.0 meters (10 feet). On the east side, a typical front-yard is 7 meters (23 feet). On the west side of 5th Street, the front-yard setback is 9 meters (30 feet), whereas on the east side, the front-yard setback is typically 3 meters (10 feet).

One-way streets can result in de-stabilizing influences. Increased traffic flows discourage families from living in residences fronting on these busy streets. Increased noise, dust and the perceptions of an unsafe pedestrian environment can also result from one-way streets. These factors change the way the street is used by pedestrians resulting in discouraging social interaction with neighbours. A longer-term consequence is that property owners reduce their regular mainte
nance or do not invest in the beautification of their properties.

The conversion of 2nd and 5th Streets in Cliff Bungalow-Mission from one-way to two-way can slow down the traffic and can make a street more pedestrian-friendly. This change can also contribute to the renewed efforts by both the City of Calgary and local residents to enhance the vitality of these streets and the community at large. The City of Calgary Planning and Transportation Policy Business Unit updated the Cliff Bungalow Area Redevelopment Plan (ARP) in July 1993. It is currently reviewing the Mission ARP that was approved by Council in 1982. One of the well-recognized outcomes of these planning exercises is a renewed interest in the revitalization of the community on the part of business owners, property owners (residential and commercial) and tenants.

10.0 INTERFACE WITH ADJACENT COMMUNITIES

10.1 INTRODUCTION

Throughout the project, there have been discussions with the community association representatives and the general public on numerous issues relating to traffic control, neighbourhood traffic studies and parking management. These and other issues were brought to the attention of the project team. General aspects of the public consultation process are discussed in Section 11.0.

This section provides the some specific information on the implications of the 2nd Street and 5th Street two-way conversion on a community basis. It was the objective of the project team to ensure that issues be addressed as part of preparing the traffic management plan, or monitored if problems arose after the implementation of the two-way traffic pattern.

10.2 MOUNT ROYAL COMMUNITY

The Transportation Planning Group conducted a community-based traffic study during 2001. The interface with the conversion of 5th Street from one-way to two-way traffic operations was of specific interest to the community representatives. Specifically the traffic study indicated support for making Hillcrest Avenue an exit only operation. The proposed two way traffic control plan for 5 st and the intersection of 25 ave is supportive of the Mount Royal Traffic Study initiatives for this location. The 5 st sw plan presently allows northbound motorists to make left turns at 23rd Avenue, 22nd Avenue, Royal Avenue and at 19th Avenue. This could present the possibility of motorists using these roads to access other routes or destinations such as the 17th Avenue commercial area, Western Canada High School, and the Downtown. The traffic operations analysis for the intersection of 5th Street and 17th Avenue indicates that the anticipated northbound volumes can be accommodated with minimal delay. The Mount Royal Traffic Study indicated support for traffic flow restrictions on Royal Avenue behind the high school. These restrictions would provide a detterant for motorists wishing to avoid the intersection of 17 ave and 5 st. The Traffic Assessment section has committed to the Mount Royal Community an ongoing monitoring process to address any shortcutting issues which might occurr due to the two way conversion.

10.3 ERLTON COMMUNITY

Representatives from Land Use and Mobility and Alderman Ceci have met with the community association executive on several occasions to discuss the 2nd Street and 5th Street conversion project. They appreciate the scope of the project and their community's involvement; however, they have expressed concerns regarding the volume of traffic on 25th Avenue through their community. To ensure that their concerns are addressed, it is proposed that traffic counts including speed analysis will be conducted after the conversion is complete as part of an overall system monitoring process.

10.4 RIDEAU/ROXBORO COMMUNITY

This community association was an integral part in developing the various solutions proposed in the Inner City Transportation Study. They have indicated support, however, are concerned with increased traffic on Mission Road. Presently, the Transportation Planning Solutions Group is working with the community representatives to address the volume and speed issue on Mission Road.

10.5 CONNAUGHT COMMUNITY

The community association executive has provided ongoing feed back on the 2nd and 5th Street conversion project. They have been supportive of the proposal, however, they are concerned about mitigation measures for 5th Street between 10th Avenue and 17th Avenue S.W. The issues raised by the Connaught representatives have been reviewed and will be included in the 11th and 12th Avenue Traffic Management Study. The executive are concerned about shortcutting traffic through Connaught due to 5th Street being reduced to one lane southbound at 17th Avenue. They would like to see the 10th Avenue, 11th Avenue and 12th Avenue routes be developed as a reasonable alternative.

10.6 CLIFF BUNGALOW- MISSION COMMUNITY

Since 2nd Street and 5th Street directly impacts this community, the executive has been extremely helpful and supportive. There were numerous residents with site-specific parking issues, which have been addressed in the traffic plan. The residents of the Roxboro/Riverstone Condominiums have expressed concerns over access and loading issues, which are presently being addressed. Due to the ongoing Mission Area Redevelopment Plan (ARP) process, the residents see the conversion as a positive step in assisting the changes in land use which are anticipated in the ARP.

11.0 PUBLIC CONSULTATION

11.1 BACKGROUND

During the project, a variety of communication techniques were used to inform the public about the proposed plan to convert 2nd and 5th Streets to two-way traffic operations. These included phone conversations, community association meetings, small group meetings, an information brochure, and a public open house that was sponsored by the City of Calgary. This section of the report will summarize the content and major findings of the following public communications techniques:

- Community association open houses
- Representative small group meeting
- Project open house

11.2 COMMUNITY ASSOCIATION OPEN HOUSES

Two evening public open houses were held on September 19 and 20, 2001 under the auspices of the Cliff Bungalow-Mission Community Association to raise awareness and gather comments on community planning issues. A total of approximately 140 people attended the two open houses.

Representatives of Calgary Roads were in attendance to explain the Council direction to convert portions of certain one-way streets in the area to two-way traffic operations. These streets included 2nd and 5th Streets, and 25th and 26th Avenues.

Using comment sheets, the public was asked to state the advantages and disadvantages of the proposed conversion, and to identify issues that they believe need to be addressed in the planning for the conversion. Of the 56 comment sheets submitted by the public, 23 people expressed support for the conversion, 10 were opposed, 23 did not state a specific position, but raised particular issues that they felt needed to be addressed. The number of comments made by the 56 respondents can divided as follows:

- Advantages or support - 55
- Disadvantages or opposition - 48
- Issues to be addressed in the conversion - 42
- Other comments - 24

Table 11.1 indicates the major affirmative comments and the frequency of these responses.

Table 11.1 Community Association Open Houses
Major Affirmative Responses

Subject Area	Number of Responses
Conversion to two-way will reduce the speed of traffic	16
Conversion to two-way will preserve and restore the "community feel" to the area	12
Conversion to two-way will improve access to different parts of the community	11
Two-way streets are safer	7
These four comments represent 84 percent of the positive comments made regarding the conversion to two-way traffic.	

Table 11.2 indicates the major comments that were made in opposition to the two-way conversion.

Table 11.2 Community Association Open Houses
Major Comments in Opposition

Subject Area	Frequency of Response
Two-way traffic will be dangerous for drivers and pedestrians who are not used to looking both ways	9
Conversion to two-way traffic will simply result in unnecessary congestion	8
Conversion to two-way will result in a significant loss of on-street parking	6
Opposed to the conversion of 5th Street south of 17th Avenue only	5
These four comments represent 58 percent of the negative comments on the proposed traffic scheme. Of the 42 comments made regarding issues to be addressed in the conversion planning, 18 indicated a need for a comprehensive publicity campaign to make city-wide motorists and local residents aware of the changes, and 6 pertained to the need for more visitor parking. Of the 24 miscellaneous comments made, the key one (7 responses) was "this was a great decision".	

11.3 REPRESENTATIVE SMALL GROUP MEETING

Early in September 2001, letters were sent to various community representatives giving notice of a small group meeting to review the issues related to the conversion and to give advice and comment regarding specific details of the proposed Traffic Plan. The organizations involved were:

- Calgary Pathway Advisory Council
- Cliff Bungalow-Mission Community Association– (2 representatives)
- Connaught Community Association
- Elbow Park Residents Association
- Erlton Community Association
- Federation of Calgary Communities
- 4th Street BRZ
- Inner City Coalition
- Mount Royal Community Association
- Rideau/Roxboro Community Association
- Victoria Community Association
- Victoria Crossing BRZ

As indicated in Section 4.2, representatives of the project team from the City of Calgary described the preliminary traffic plan for implementing two-way traffic operations on 2nd and 5th Streets, and 25th and 26th Avenues. Particular attention was given to the transition points, curb parking issues, pedestrian crossing points, bicycle path operations on 2nd Street, and the need for separate left turn lanes on 5th Street at 23rd and 25th Avenues and Elbow Drive, and on 2nd Street at 17th Avenue.

11.4 PROJECT OPEN HOUSES

On Saturday November 17, 2001, a public open house was held by the City of Calgary, Calgary Roads, to gather public input on the implementation plan for the conversion of 2nd and 5th Streets, and 25th and 26th Avenues to two-way traffic operations. Notices advertising the open house were delivered to 7,700 households in the Connaught, Victoria Park, Cliff Bungalow-Mission and Erlton areas. News articles were distributed to community newsletters, and a city-wide ad was placed in the Calgary Herald on November 9, 2001. Notice of the open house was also sent by first class mail to suburban community associations and approximately 250 individuals who either attended the open house in September, participated in the small group meetings, and/or sat on the previous Inner City Transportation Study Round Table.

Approximately 125 people attended the open house. A wide variety of comments were received. Of the 80 comments sheets returned, 46 expressed concern with the fundamental concept of converting the streets to two-way traffic flow. The remainder expressed support for the project, or offered some specific suggestions for improvements to the plan.

Those who indicated concern with the general merits of the conversion of one-way to two-way traffic thought that it would slow traffic flow and cause undue congestion (23 comments), with a preferred objective being to improve the speed and flow of traffic in and out of the downtown. Nine (9) respondents thought it would cause more accidents, with vehicles stopping and starting, and with pedestrians not looking both ways. Six (6) persons who commented preferred to see the implementation of other suitable options for traveling to and from the south (e.g., better public transit, 37th Street extension) before slowing traffic on inner city streets. Six (6) comments in opposition to the proposal referred to a potential increase in road rage and/or traffic shortcutting on residential streets.

Thirteen (13) respondents indicated strong support for the conversion project, wishing the implementation to happen as soon as possible. They believed that the roads would be safer and more community oriented. Six (6) persons mentioned that 2nd Street was particularly suitable for conversion to two-way, while eight (8) comments indicated concern about the proposed reduction of on-street parking on 2nd Stree to permit two-way movement and/or two-way bike route operations. The comment sheets requested the r spondents to indicate their preference for separate left turn lanes on 5th Street at 23rd or 24th Avenues or at 2nd Street at 15th Avenue. There was no definitive preference in that there was only one "vote" difference in each case.

Under the topic of "other comments", four (4) persons expressed concern and belief that south and southwest communities were not sufficiently consulted when the inner city recommendations were originally approved by City Council. Three (3) others advocated a comprehensive public information campaign before and at the time of the actual traffic change.

Exhibits 11.1 and 11.2 contains a copy of the public notice sent to households and an information sheet that provided information on the background of the project.

EXHIBIT 11.1

PUBLIC OPEN HOUSE

CALGARY

ONE-WAY STREET CONVERSION DRAFT PLAN

Date: Saturday, November 17, 2001

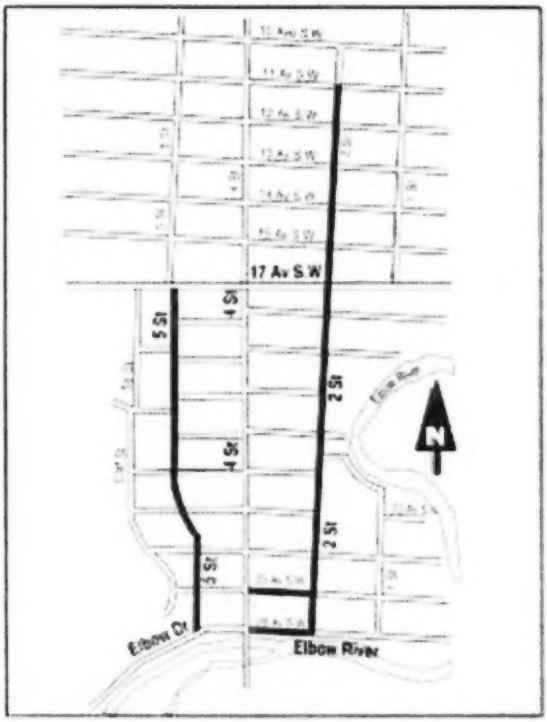
Time: 10:00 AM – 3:00 PM

Location: Cliff Bungalow/ Mission Community Centre 2201 Cliff St. SW

Everyone Welcome

For more information call Martin Halliday 268-2189.

In July 2000 Calgary City Council approved the Inner City Transportation Plan which contained recommendations intended to improve the safety of inner-city streets, improve accessibility to local residences and businesses and enhance the ambiance of adjacent neighbourhoods.



One of the approved recommendations, is the conversion of the following inner-city streets from one-way to two-way:

- 5th Street SW from 17 Ave. south to Elbow Drive
- 2nd Street SW from 10 Ave south to 26 Avenue SW
- 25th and 26th Avenues SW between 2nd and 4th Streets

It is anticipated that the actual street conversion will take place in the summer of 2002. A design plan is being prepared now that details the street changes necessary to implement the conversion. Please drop in and give your views on this draft plan.

EXHIBIT 11.2 (PAGE 1)

THE CITY OF CALGARY

2ND AND 5TH STREET SW – ONE-WAY CONVERSION TO TWO WAY
Background Information

In response to the recommendations contained in the Calgary Transportation Plan (GoPlan) approved by City Council in May 1995, and the subsequent Inner City Transportation Plan, the City will be implementing changes to some streets in inner-city communities over the next several years. The intention of these changes is to improve the safety of inner-city streets, improve accessibility to businesses and residences, and enhance the ambiance of the neighbourhood. Your input is important to ensure that these changes are designed to best meet the needs of the road users and adjacent neighbours. The following are some questions and answers about the project to be undertaken in Cliff Bungalow/Mission over the next year.

1. **What changes are slated for the Cliff Bungalow / Mission area?**
   The changes recommended for this neighbourhood are the conversion of current one-way streets in the area to two-way. This will apply to:
   - 5th Street SW from 17 Ave. south to Elbow Drive
   - 2nd Street SW from 10 Ave. south to 26 Avenue SW
   - 25th and 26th Avenues SW between 2nd and 4th Streets

   This will mean that in future, all the streets in the Cliff Bungalow/Mission area will be two-way.

2. **Why are these changes necessary?**
   Calgary is a rapidly growing city. The Calgary Transportation Plan and the Inner City Traffic Plan were completed over the past decade to address the traffic issues associated with growth. They were prepared with extensive public input. Throughout these planning processes, Calgarians voiced strong support for the principle that people should be encouraged to live closer to their work destinations, and that this should be accomplished by locating employment centres in suburban areas, and/or increasing Calgary's downtown and inner-city residential population. To accomplish the latter, inner-city living environments must be enhanced.

   Residents of central city neighbourhoods have long complained that traffic noise and speed are negative elements of downtown living. A variety of measures have been approved by City Council to control avoidable growth of traffic and to reduce the negative impacts of residential and commuter traffic on inner-city streets.

   Historically, 2nd and 5th Streets were two-way roads serving their respective medium density communities. In 1979, as part of the construction of the 5th Street underpass at 9th and 10th Avenues SW, the roads were converted to one-way, and have been so ever since. Restoring 2nd and 5th Streets to two-way traffic with appropriately designed pedestrian and cycling movement, will allow people more direct access to destinations in the community and will signal to motorists that these are local roads rather than higher speed thoroughfares - increasing pedestrian safety and enhancing the community feel. Recent transportation studies have shown that this conversion is feasible and readily implementable.

EXHIBIT 11.2 (PAGE 2)

3. **How were these changes formulated?**
   The traffic measures recommended in the Inner City Traffic Plan (such as the one-way street conversion) were formulated through extensive technical analysis, consultation with community associations and user groups, and a technical review panel of outside experts. Finally, the system of traffic measures were approved by Council members after careful scrutiny and input from members of the general public. Detailed design plans for implementation are now being prepared that will address all the related traffic movement features that are required to make the recommended changes work.

4. **Why not make 5th Street two-way, all the way downtown?**
   5th Street is required to be one-way, as a couplet to 4th Street, within the downtown core in order to move the highest volume of traffic efficiently out of the core area. A significant portion of traffic in the core will move off onto connecting avenues such as 10th, 11th, 12th and 17th as it leaves the downtown.

5. **How will the work be done and when?**
   It is anticipated that the physical changes to make the conversion will be done in the 2002 construction season. A communication campaign to residents and motorists about the impending changes will be initiated at that time.

6. **What about parking on 2nd and 5th Streets?**
   It is necessary to coordinate on-street parking with recommended on-street cycling routes. It is expected that parking will be permitted on the west side of 2nd street. On 5th Street it is expected that there will a similar amount of parking after conversion as is currently the case, but the actual location may vary slightly.

7. **How will you evaluate the effectiveness of the change?**
   It is difficult to measure the success of such a change in the short term. City Traffic Assessment staff will compare accident rates, speed levels and traffic volumes over a one or two year period and prepare an evaluation report. Complaints will also be tracked to measure acceptance over that period.

8. **How can the public be involved?**
   The implementation plan for the street conversion is being prepared by Swanson Transportation Consultants Ltd., in collaboration with City staff and in consultation with community representatives. The general public will be invited to review the draft implementation plan and provide input at a public review session in November. Your input is very important to ensure a smooth transition in street use. Once the implementation plan is finalized, it will be submitted to Committee and Council review and approval.

9. **Contact for further information:**

   Martin Halliday, City of Calgary Senior Traffic Planner 268-2189

12.0 IMPLEMENTATION

12.1 COSTS

The project for budgeting purposes has been divided into the following areas: traffic signal changes, traffic control signing changes, road marking changes, civil construction works, public/media, and temporary traffic control. The details are outlined below.

12.2 TRAFFIC SIGNALS

This work has been estimated at $1,100,000 and involves changes to 12 traffic signals and two pedestrian corridors. The scope involves new bases and mast arms for the added direction of travel and enhanced capabilities for the signal controllers at the interface intersections.

12.3 TRAFFIC CONTROL SIGNS

This work involves changing all traffic control devices to ensure motorists are cognizant of the new two-way traffic operations. This portion has been estimated at $40,000 and includes parking, pedestrian, traffic control and the new shared-bike lane signs.

12.4 ROADMARKING

The existing road marking is designed for a one-way operation and, where possible, the existing skip lines will be painted over with a new yellow centerline. The shared bike lane on 2nd Street S.W. will require stenciling bike icons at approximately four per block. Other road marking additions will be included during the work order preparation stage. The cost has been estimated at $10,000.

12.5 CIVIL CONSTRUCTION WORK

During the concept development process, numerous locations were identified where the overall sidewalk and traffic infrastructure could be enhanced; i.e., sidewalk widening, corner bulbs and permanent traffic islands. The cost to achieve all of the features identified was estimated at $435,000. However, the cost to construct the necessary attributes needed to make the 2nd Street and 5th Street conversion function has been estimated at $90,000. This includes changes at 17th Avenue and 5th Street S.W., changes on Elbow Drive between 5th Street and 4th Street and sidewalk widening on 2nd Street between 10th and 11th Avenue S.W.

12.6 IMPLEMENTATION COST SUMMARY

To implement a project of this magnitude, recognizing its impact on the motoring public, the roadway and traffic control changes must be made in short period of time, usually one day. As a result, the roads being included in the traffic plan would need to be closed while the various crews are implementing the necessary changes. A media program would also be required to advise Calgarians of the traffic pattern changes. The cost for this program has been estimated at $100,000.

The overall cost for this project, as identified above, has been estimated at **$1,340,000.**

(Footnotes)

[1] Inner City Transportation System Management Strategy, The City of Calgary, Land Use and Mobility, June 2000.

[2] Survey of Communities Converting Downtown Streets from 1-Way to 2-Way Traffic Circulation, Hyannis Main Street Business Improvement District, December 1999.

[3] McBride, John, "Is Free On-Street Parking the Answer", Canadian Parking Association Annual Conference, St John, New Brunswick, October 2001

[4] Hassan, Howaida, Alan Brownlee and Brice Stephenson, "A Study of One-Way to Two-Way Streets Conversion in Downtown Edmonton", Canadian Institute of Transportation Engineeers, Calgary, Alberta, May 2001.

[5] Hart, Jere, "Converting Back to Two-Way Streets in Downtown Lubbock", ITE Journal, Institute of Transportation Engineers, August 1998.